INSIDE THIS WEEK: TECHNOLOGY QUARTERLY

The Economist

SEPTEMBER 6TH–12TH 2008

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Hurricane Palin

Britain's stumbling economy

Ungovernable Thailand

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Can we re-engineer the planet?

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Europe stands up to Russia

The European Union has wobbled woefully, but Russia too will eventually lose from its Georgian adventure: leader



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Politics this week

Sep 4th 2008
From The Economist print edition

More than 2m people were evacuated along the Louisiana coast ahead of **Hurricane Gustav**. New Orleans faced its first threat of serious flooding since Hurricane Katrina struck three years ago, but Gustav just missed the city. Some residents returned to their homes, though many were without electricity. Earlier the storm tore a destructive path through the Caribbean, killing 95 people, most of them in Haiti. See article

Gustav also wrought havoc at the start of the **Republican convention** in St Paul, Minnesota. The party cancelled the first day's schedule in order, it said, to let administration officials concentrate on the emergency. John McCain was probably not too upset that George Bush missed the proceedings; the president, who has dismal approval ratings, spoke to the delegates via a satellite link instead. See article

EPA



John McCain made the surprise choice of **Sarah Palin** as his vice-president. Mrs Palin, the first woman to feature on a Republican presidential ticket, has been governor of Alaska for 20 months and is virtually unknown outside the state. Her nomination delighted social conservatives, who were undismayed by the revelation that Mrs Palin's 17-year-old unmarried daughter is pregnant. Others wondered if Mr McCain had properly vetted his running-mate. See article

Television ratings were released for **Barack Obama's** convention speech on August 28th, when he officially accepted the Democratic presidential nomination in front of 84,000 people at a sports stadium. More than 38m people tuned in to the event, twice the audience that viewed John Kerry's address to his party in 2004, but not as many that watched big football games earlier in the year.

Over to the Kremlin

At a summit in Brussels, the **European Union** criticised **Russia's** war on Georgia and especially its recognition of the breakaway regions of South Ossetia and Abkhazia. It also repeated demands for Russian troops to withdraw from Georgia proper. France's president, Nicolas Sarkozy, who chaired the summit, said he would visit Moscow and Tbilisi to check on Russian compliance. But the EU stopped short of imposing sanctions on Russia. See article

Ukraine's president, Viktor Yushchenko, threatened to call a snap parliamentary election because parliament is trying to trim his powers. Mr Yushchenko had earlier accused the prime minister, Yulia Tymoshenko, of treason for not criticising Russia's attack on Georgia.

The Greek-Cypriot and Turkish-Cypriot leaders began formal talks in Nicosia (the capital for both) over a possible plan to reunify **Cyprus** after 34 years of division. See article

There were more red faces in **Britain's** Labour government when the chancellor of the exchequer, Alistair Darling, said the country faced the worst economic crisis in 60 years shortly before Gordon Brown, the prime minister, unveiled a plan to boost the flagging housing market. See article

Condi's cordiality

America's secretary of state, Condoleezza Rice, was expected to set off on a tour of North African countries, including **Algeria**, **Morocco**, **Libya** and **Tunisia**. Her visit to Libya marks a warming of relations since Libya gave up a nuclear-weapons programme in 2003 and more recently agreed to make final compensation for the bombing of an American passenger aircraft over Lockerbie in Scotland in 1988.

Italy signed a deal to pay Libya $5 billion over 25 years to compensate it for mistreatment during

colonial times.

American forces in **Iraq** handed responsibility for the province of Anbar, west of Baghdad, back to Iraq's own forces. Anbar had been the bloodiest zone in the first years of the insurgency, but is now pretty calm.

AP



Angolans were about to vote in their first general election in 16 years. The ruling Popular Movement for the Liberation of Angola (MPLA) was widely expected to win a majority of seats, with Angola's oil-primed economy said to be the fastest-growing in Africa.

The north poll

Stephen Harper, prime minister of **Canada's** minority Conservative government, seemed set to call an early general election—the third in four years—after abortive talks with the leader of the main opposition party. See article

President Luiz Inácio Lula da Silva suspended from office the chiefs of **Brazil's** spy agency, Abin, after allegations were made that agents had bugged telephone calls between the head of the supreme court and a politician. See article

Argentina's president, Cristina Fernández de Kirchner, announced that the country would repay $6.7 billion in long overdue loans to the Paris Club of 19 sovereign creditors. See article

To his intense annoyance, President Evo Morales's plan to hold a constitutional referendum in December to allow him a second consecutive term was dismissed by **Bolivia's** electoral court.

On the streets

Samak Sundaravej, **Thailand's** prime minister, declared a state of emergency in Bangkok after violent clashes between protesters and government supporters. Demonstrators calling for his resignation continued their sit-in at his office. A strike by workers in state-owned industries in support of the protests was poorly observed. See article

Yasuo Fukuda, **Japan's** prime minister, announced his resignation after less than a year in office, citing a "vacuum" because of his inability to implement policy. The favourite to succeed him, in a vote by the ruling Liberal Democratic Party to be held on September 22nd, is Taro Aso, the party's secretary-general and a former foreign minister. See article

In an apparent assassination attempt, shots were fired in Islamabad at the (empty) motorcade of **Pakistan's** prime minister.

Water levels began to recede in **India's** flood-devastated state of Bihar. But tens of thousands of people stranded by the floods awaited rescue, and hundreds of thousands of victims were housed in temporary camps. See article

Reuters



British forces in **Afghanistan** delivered a Chinese-made turbine to refurbish the Kajaki hydroelectric power station in a 100-vehicle convoy protected by thousands of NATO soldiers. A new road was cut through the desert to outfox the Taliban along the most dangerous stretch, and NATO said heavy fighting to clear the route killed 250 of them. Once the repair is complete, the power station should produce 51MW of power, supplying about 2m Afghan homes. See article

Business this week

Sep 4th 2008
From The Economist print edition

BP and its Russian partners in **TNK-BP** agreed on a plan to resolve a long-running dispute that has roiled the firm's management. Three independent directors will be appointed to TNK-BP's board, on which BP and AAR, the consortium of Russian investors in the joint venture, will have four representatives each. The firm's 14-strong management committee, which oversees day-to-day business, will be reduced. The public may be offered 20% of the shares in a TNK-BP subsidiary. Bob Dudley will step down as TNK-BP's chief executive. His replacement, to be nominated by BP, will be "a Russian-speaking candidate with extensive Russian business experience". See article

In one of German banking's largest mergers, **Commerzbank** agreed to take over **Dresdner Bank** in a deal worth €9.8 billion ($14.5 billion). Commerzbank is buying Dresdner from **Allianz**, Europe's biggest insurer. Allianz paid €24 billion for Dresdner in 2001, but the business has dragged down profits. Some 9,000 jobs will be shed at the combined bank and operations will shrink at Dresdner Kleinwort, the investment-banking division that contributed to huge write-downs at Allianz. See article

Federal prosecutors in New York charged two former brokers at Credit Suisse with **securities fraud**. The pair allegedly asked investors for money to put into low-risk securities backed by student loans, but then used the funds to buy higher-yielding mortgage-backed collateralised-debt obligations.

To the rescue?

Korea Development Bank confirmed it was holding negotiations with **Lehman Brothers** about making a possible investment in the Wall Street bank. The credit crisis has left Lehman vulnerable to market speculation that it could run out of cash. Lehman was dealt a blow when a hedge-fund management group in which it holds a 20% stake was forced to close its flagship fund after taking heavy losses in August. **Ospraie Management** placed bets on commodity prices, which have recently tumbled. See article

The Children's Investment Fund and Atticus Capital said they would work to get **Deutsche Börse** to increase shareholder value. The activist funds together hold 19% of the voting rights in the group, which operates several businesses including the Frankfurt Stock Exchange. The funds may press Deutsche Börse to break itself up.

Reversal of fortune



The **dollar** continued to rise against a range of currencies, boosted in part by an OECD report that raised the estimate of America's 2008 GDP growth rate to 1.8% (from the 1.2% published in June). The same report lowered the predictions for economic growth in the euro area to 1.3% and in Japan to 1.2%. Britain was forecast to fall into a technical recession in the second half of 2008; the **pound** dropped to a record low against the euro.

With Hurricane Gustav causing little disruption to production in the Gulf of Mexico, the **price of oil** closed below $110 a barrel for the first time in several months.

The **IMF** reached a preliminary agreement with more than two dozen **sovereign-wealth funds** on a voluntary set of commercial guidelines. The sovereign funds of countries such as Singapore and the Gulf emirates have risen to prominence during the credit crisis, often throwing lifelines to banks through big investments. The guidelines will be made public and discussed at the IMF's October meeting.

Google launched its own web browser, **Google Chrome**, intensifying its competition with Microsoft, which accounts for three-quarters of the web-browsing market with its Internet Explorer (IE). Google has long

feared that IE can be tweaked to give an advantage to Microsoft’s own search engine. See article

Boeing’s largest union voted to go on strike over a new contract, but the walkout was delayed when the aircraft-maker’s management agreed to keep negotiating.

Driven to drastic measures

India’s **Tata Motors** suspended work on its new factory in West Bengal amid continuing protests by farmers who say they have been forced off their land without being properly compensated by the government. In October the plant is due to start building Tata’s **Nano**, the world’s cheapest mass-produced car with a price tag of $2,300. Tata described the situation as “hostile” and has threatened to relocate the factory.

Coca-Cola agreed to pay $2.5 billion for China’s **Huiyuan Juice**, which makes fruit and vegetable drinks. It is the largest foreign acquisition ever of a Chinese company. Faced with sluggish sales of carbonated soft drinks at home, Coca-Cola has steadily increased its range of natural drinks.

KAL's cartoon

Sep 4th 2008
From The Economist print edition

Illustration by KAL



After Georgia

Europe stands up to Russia

Sep 4th 2008
From The Economist print edition

The European Union has wobbled woefully, yet Russia too will pay dearly for its Georgian adventure



IT IS now close to a month since the reckless Georgian effort to retake breakaway South Ossetia by force sparked off what Russia is now calling its August war. There is no new iron curtain descending across Europe, no ideologically based "new cold war"; but there is a deep, wounding division that stretches far beyond wrecked Georgia, South Ossetia and Abkhazia. To paraphrase Winston Churchill, from Tallinn on the Baltic to Tbilisi and beyond, the violence of the past month, along with Russia's assertions of its "privileged interests" in its far-flung neighbourhood, has done more damage to relations between Russia and the West than Russia's leaders think they need to care about and many Europeans care to admit.

That was the background against which Europe's squabbling leaders met on September 1st. The talk the day before was that it would be impossible for the hawks (such as Britain and the Baltics) to agree on anything with the gas-swilling Russophiles (such as Italy and Germany). A day later they had united enough to condemn Russia's actions and produce a punishment of sorts: there will be no talks on a new partnership agreement between Russia and the EU until Russian troops leave Georgia proper and resume their positions of August 6th (see article). Yet a smirking Vladimir Putin and Dmitry Medvedev do not seem to be quaking in their boots—indeed they think they have triumphed diplomatically as well.

Like a chocolate fireguard

In fact both Europe and Russia have lost. The European response has been weak. No doubt, it was a little tougher than some predicted a week ago, but jump back a month. In early August Mr Putin would not have dared imagine that Russia could invade and partially occupy a neighbour for the first time since the cold war, let alone recognise South Ossetia and Abkhazia as independent states—and meet such a wobble. It is not just that the partnership talks matter little to the Russians. The Europeans have not even insisted on formal restoration of Georgia's territorial integrity before they start; merely a withdrawal of troops, which Mr Medvedev promised anyway. EU leaders have in effect condoned Russia's smash and grab.

Thus the second casualty, after wretched Georgia, is the idea of a common European foreign and security policy. This was supposed to be a morally superior combination of the soft power of Europe's economic attraction (morally superior, of course, to trigger-happier America) with an occasional harder edge only in the lawless bits of the world beyond Europe's shores. After Georgia's folly, not even the United States was proposing to take on Russian tanks as they rolled in. Yet how quickly talk of sending EU troops to uphold the ceasefire that Russia was flouting died away. Instead, civilian EU monitors—not even the

paramilitary police Europeans claim to be their speciality and who might protect Georgian villagers from South Ossetian militias—may eventually, if Russia agrees, join those from the Organisation for Security and Co-operation in Europe, a body to which Russia belongs.

Such a collective Euro-shrug only stores up trouble, since there are other places where Russia enjoys fomenting bother. NATO needs to reassure all its members, including places like Estonia and Latvia with large Russian minorities, that they are protected by the alliance's mutual defence guarantees. Harder to help will be Ukraine, genuinely divided over whether its closest ties should be with the West or with Russia, and with plenty of ethnic Russians. But the EU can do more to encourage economic reform and the fight against corruption.

In fact the most useful cure for the Eurowobbles over Russia lies not in diplomacy but in Europe's internal market: liberalising the EU's energy markets and where possible connecting up its internal supply lines. It makes economic sense and does not involve picking a needless fight with Russia. As long as governments like Germany's prefer to cut separate deals with Russia, Europe's inevitable dependence on Russian oil and gas will always offer a tempting way for an opportunistic Kremlin to exert pressure on this country or that, by turning off the taps for "pipeline repairs". Recent promises that Russia will remain a reliable energy supplier should be viewed warily.

Imperious follies

Mr Putin once described the collapse of the Soviet Union as the greatest geopolitical catastrophe of the 20th century. That is not a view shared by Georgia, Ukraine, the Baltic states or the Central Asian countries that escaped the Soviet empire to win their independence. Yet his aim is to restore Russia as a great power, not to bring back communism as a global ideology. His officials insist that Russia wants more respect, not more territory. Thus, after what many Russians see as years of slights from the West, NATO's suspension of co-operation has been swatted aside. So has the unprecedented rebuke from Russia's G8 partners in the world's premier political club.

Yet the limits of Russia's August "victory" are becoming clear. Its erstwhile friend China, struggling to keep a grip on its restive regions, has expressed "concern". None of Russia's other friends—bar, belatedly, Belarus and Venezuela—has volunteered support. And while the Georgia adventure may have scared the neighbours, Russia's support for separatists in South Ossetia and Abkhazia risks emboldening its own would-be breakaway regions, notably in the north Caucasus.

Ordinary Russians will bear the cost. Russia's stockmarket has taken a knock and the costs of doing business there have shot up. Russian companies seeking to invest or list abroad ought now to face the closer scrutiny of their finances that earlier dodgy ones didn't, but should have. And Mr Medvedev's supposed plans for reform and strengthening the rule of law are in about the same shape as Georgia's beaten army.

But what Russia may come to regret losing most is something Mr Putin longs for: the opportunity to become an accepted European power. He likes to skip over communism's mistakes and dwell on Russia's tsarist grandeur. But what did for both was imperial overstretch, a rotten economy and, like Russia's today, a mostly unaccountable ruling caste that led a proud country to disaster.




Britain's economy

How bad is it?

Sep 4th 2008
From The Economist print edition

Not as wretched as the doomsters claim; but reviving the British economy will take time



“THE nine most terrifying words in the English language”, Ronald Reagan is held to have said, “are: ‘I’m from the government and I’m here to help.’” If only Gordon Brown had listened. The prime minister’s plan, revealed on September 2nd, to keep Britain’s troubled £4 trillion ($7 trillion) housing market “moving forward” by advancing some £1.6 billion-worth of help to first-time buyers, purchasers of modest properties and homeowners struggling to meet their mortgage payments was never going to be more than cosmetic. In the event it mixed a few sensible ideas (faster help for those whose banks threaten to repossess their houses) with a few dotty ones (luring first-time buyers into a falling market). But the overall effect was minimal.

The details of Mr Brown’s housing plans are the least of his problems. A few days before their announcement, his chancellor of the exchequer, Alistair Darling, hijacked the headlines for a week when he said that economic times were the worst in 60 years. Mr Darling gamely maintained later that he had been talking about prospects for the world, not for Britain in particular. But before that dog had even tried to hunt, the OECD, a rich-country think-tank, released a widely reported assessment of the outlook for the world’s seven biggest economies. Britain, it reckons, is the only one facing recession (two quarters of negative growth) this year. This called into question Mr Brown’s oft-repeated claim that economic woes are global, and well-managed Britain is better placed than most to deal with them.

The good, the bad and the ugly

That the British economy has serious problems is pretty obvious. Britain’s housing bubble was more dangerously inflated than most countries’; its households are more indebted; financial services account for a bigger share of its economy; and its government, thanks in large part to Mr Brown, spent with both hands during long years of unremitting economic growth, leaving little scope for fiscal fine-tuning now.

So the bad news is clustering thick and fast. The economy stagnated in the three months to June. Gloomy forecasts come not just from think-tanks: the governor of the Bank of England says that growth will be flat for a year. Sterling has lost 15% of its trade-weighted value over the past year, and 5% over the past month. Consumer-price inflation is widely expected to hit 5% this year (more than twice its official target), though the sharp drop in oil prices may blunt that spike. Unemployment is edging up. And the housing market is collapsing: prices have fallen by 11% in a year, and the number of new mortgage approvals in July was 71% lower than the same month last year.

The picture looks even more dismal compared with the United States. The American economy is growing

again, the dollar is bouncing back and some people even reckon the housing crisis has touched bottom. Whether this is mainly owing to a $180 billion fiscal handout (whose effects may fade), America's inexhaustible energy and now-flourishing exports, or the simple fact that it stumbled earlier is a matter of debate. Whatever the answer, Britain's prospects appear grim in comparison.

But the worst outlook in six decades? Nonsense. Britain is not going to return to the rationing of the 1940s, the three-day working week and 25%-plus inflation of the 1970s, or the 3m unemployed of the early 1980s. Nor does Britain look so bad in comparison with the neighbours. The somewhat flaky OECD report was sexed up in the retelling (see article); and, while Britain is teetering on the brink of recession, the euro zone is already shrinking.

So Mr Brown is right to point out not only that others share Britain's suffering (see article) but also that there is a resilience to its economy. That's partly because Britain's labour and product markets are more flexible than many of its neighbours': the labour market has a safety valve in the form of the 1m workers who arrived from central and eastern Europe over the past four years and are now beginning to go home. And it is also because high energy prices, while hurting consumers, boost government revenues thanks to the remnants of North Sea oil and gas production. What's more, even though Mr Brown has played fast and loose with the rules for fiscal prudence he put in place, they nevertheless make it harder for him to spend as wildly as some of his predecessors did on finding themselves in a fix.

But Mr Brown, an arch meddler, is wrong to suggest that the government can or should make it all better. A certain amount of fiscal stimulus is working its way through the system now: some £2.7 billion will be paid next month to taxpayers who lost out when the 10% tax band was abolished from April; and benefits rise and tax receipts fall automatically when the economy turns down. But setting out to spend significantly more or tax significantly less would be risky, even if the state of the public finances permitted it. A big fiscal-stimulus package would tend to push prices up and thus make it hard for the Bank of England to reduce interest rates. The Bank kept its base rate at 5% this week, but it will be looking to cut before long.

No goodies, please

The truth is that Britain is simply going to have to take it on the chin for a while. There is no easy fix, no return to the days of plucking credit cards and mortgages off trees. Sterling was overvalued; it is now falling; in time exports will respond (perhaps quite a long time, as Britain's main export market is sluggish Europe). Housing was grotesquely overpriced; prices are slumping; in time they will reach a level at which poorer young Britons can buy themselves a home. These are painful but necessary realignments.

The principal danger now is not economic but political. Sterling fell on September 1st because Mr Darling revealed not new truths about the economy but divisions and indecisiveness at the heart of government. Twenty points behind in the opinion polls, Mr Brown is understandably searching for some goodies to hand out. Fortunately, the ones he produced this week will make little difference. When he finds some that do, start worrying.

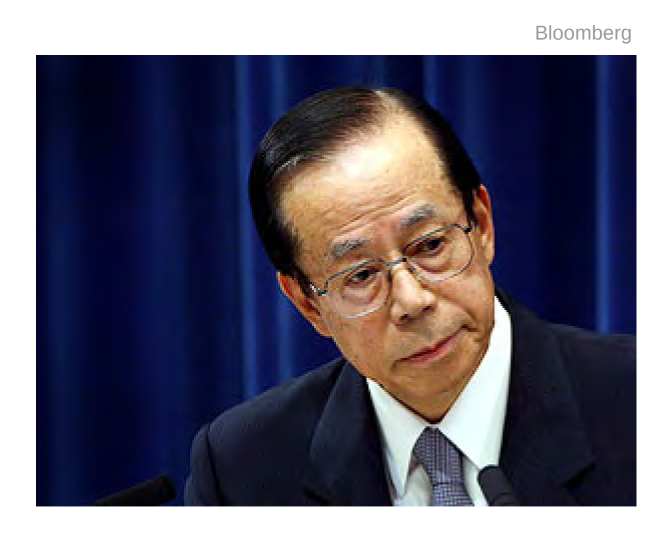
Japanese politics

Another grey man bites the dust

Sep 4th 2008
From The Economist print edition

Yasuo Fukuda's departure may just herald the political crisis Japan so badly needs

Bloomberg



BRUISED, bothered and bewildered, a Japanese prime minister for the second time in a year has thrown in the towel after a few ineffectual months in the ring. Yasuo Fukuda, like his predecessor, Shinzo Abe, had seen his popularity ratings slump, as his party rivals sharpened their knives and his policies fizzled. Meanwhile, Japan's longest period of continuous economic expansion since the war had stuttered to a halt (see article). Whoever succeeds Mr Fukuda (Taro Aso, who thought a year ago he should precede him, is the favourite) will face the same seemingly insuperable obstacles. Japanese politics seems a hopeless and depressing mess. However, for those, like this newspaper, hoping for change in Japan, this is a moment not for hand-wringing gloom, but for hand-rubbing glee: Japanese politics may have entered its most exciting period in more than 50 years (see article).

The excitement lies in the probable collapse of the old political order and the realignment it will herald. Of course, such a transformation has been predicted—and avoided—for years. And the ruling Liberal Democratic Party (LDP) still has two powerful weapons: its well-oiled machinery of patronage and the incoherence of the main opposition, the Democratic Party of Japan (DPJ). Politics still looks deceptively like business as usual. Indeed, in the end, it was a belated attempt to pursue reform and take on some of the LDP's vested interests that did for Mr Fukuda. He exhausted himself struggling against them. The succession will be decided in the traditional manner: among the LDP's barons, without asking the electorate. Japan will have its third leader in a row not to have led his party to a victory at the polls. Japan's top-down politics stands in stark contrast to America's thrilling primary season.

Yet LDP rule in its present form is in terminal decline. This had been disguised until recently by the premiership from 2001 of Junichiro Koizumi, who combined two qualities rarely seen in Japan's politicians: popularity and reforming drive. When Mr Koizumi retired in 2006, Mr Abe, youthful and assertive, seemed well-placed to maintain this momentum. But he proved disastrously inept. And it turned out that Mr Koizumi's policies were liked much less than the man himself. Despite his recent efforts to revive reform, Mr Fukuda, a stopgap, marked a return to the old, grey, back-room style. This week the party has had to admit that this did not work either.

Time for a shake-up

If Mr Aso becomes the LDP's leader, he may call an election at once, hoping to profit from the bounce in popularity a fresh face might give the party. He certainly should do so, since it is time voters had their say. But even if he does not, an election is due by September next year. For all but 11 months of the

past half-century, Japan has been ruled by the LDP. There is now a real chance the party might lose power, or at least the lower-house “supermajority” which allows it to force through legislation despite its loss in 2007 of a majority in the powerful upper house of the parliament. It will be years before the LDP has a real chance to win back that majority. Without upheaval, deadlock would be entrenched.

Which is why change might come at last. Mr Koizumi still has followers. One will challenge Mr Aso for the prime minister’s job. But many have already realised that the LDP as currently constituted cannot represent their policy ambitions. Similarly, young Turks in the ranks of the DPJ vest few hopes in their party leader, Ichiro Ozawa, a political bruiser. The prospects have rarely been brighter for these two groups to join forces and drag Japan towards true policy-based competition between parties. Nor has the need ever been greater.

Technology and global warming

The world in a test tube

Sep 4th 2008
From The Economist print edition

From plug-ins to planktonic algae, technology is part of the solution to climate change. But which technology?

Illustration by Claudio Munoz



NOTHING about global warming is simple, alas. Meteorological models fry the circuits of the largest supercomputers. Feedback loops and anomalies turbocharge an ill-tempered debate about what will happen where and when. And don't even start on the politics of negotiating a global agreement on emissions or the intricacies of cap-and-trade.

Unfortunately, the technology of climate change is no simpler than anything else. A field that you may think is governed by level-headed, spreadsheet-wielding engineers is alarmingly prone to zealotry and taboos. Climate change is too important and too complex to yield to either.

It is seductive to think a new technology can solve your problems at a stroke. But zealotry has lately suffered a defeat. It used to be an article of faith in the motor industry that hydrogen-powered fuel cells were the green future, and companies spent billions of dollars on the technology. But it turns out that fuel cells have three Achilles heels (see article).

The first is the chicken-and-egg problem that, as there are virtually no hydrogen filling-stations, there are no hydrogen cars—and hence there is no reason to build the filling-stations. Then comes the cost of hydrogen-based vehicles. Just the platinum for the catalyst inside a fuel cell costs as much as an internal-combustion engine of equivalent power, according to a recent study. And producing hydrogen from natural gas creates a lot of carbon dioxide—about double what a small, petrol-based car emits. One day hydrogen may be produced from the electrolysis of water. But it would have to be transported and stored, which would require a new infrastructure.

So, for the next few decades, at least, technological pragmatism will rule motoring. More efficient internal-combustion engines will wring out mileage from every drop of fuel, and hybrid powertrains will combine an electric motor with a conventional engine. Soon there will be "plug-in" hybrids, which can be recharged from the mains and call on a petrol-powered generator when needed. The plug-ins, in turn, are a bridge towards all-electric vehicles. The plan mapped out by the car industry may not be as technologically elegant as the fuel cell, but it has the merit that it is based on technology that works, is not expensive and can use existing infrastructure.

Fire up the Bunsen burner

Elsewhere, however, the taboos still rule. Nowhere more so than in geo-engineering, the idea of combating global warming by altering the climate by, say, absorbing carbon dioxide in the oceans, or

reflecting sunlight back into space (see article). This involves fantastic sounding schemes, such as fertilising the oceans with iron (to cause a bloom of planktonic algae, thus sucking carbon dioxide out of the atmosphere) or ejecting carbon from the poles using lasers. Scientists and policymakers have been reluctant even to discuss the subject—much less research it, because they worry that it could cause more problems than it solves and that it will give politicians an excuse to avoid curbing carbon emissions.

Both fears are reasonable. The farmer who introduced rabbits into Australia said the bunnies would do “little harm and might provide a touch of home, in addition to a spot of hunting.” The rabbit went on to become a devastating pest. And the world’s politicians, they may well negotiate with less commitment if they feel that they may one day be let off the hook.

But neither reason should stop research as insurance. Some forms of geo-engineering may in fact turn out to be easier and cheaper than widespread global curbs on climate emissions—though they may still be unacceptably risky. Only research can tell. As for the politics, geo-engineering cannot just be put back in its box. And because research creates new information, it is as likely to disabuse those who think they can avoid climate-change agreements as it is to offer them false hope. Just ask the people who have given their lives to the fuel cell.

The solution to climate change will probably involve an array of technologies, from renewables, nuclear, carbon sequestration, public transport to energy conservation. It is too early to say whether geo-engineering or anything else will be part of this mix. Geo-engineering may turn out to be too risky, however much is spent on researching it. Then again, there may come a time when it is needed. The world needs to be ready—and research is the only way to prepare.

Thailand

Worse than a coup

Sep 4th 2008
From The Economist print edition

An authoritarian rabble should not be allowed to turf out a deeply flawed but popularly elected government

EPA



STANDING up for democracy sometimes entails standing up for some unappealing democrats. Thailand's pugnacious prime minister, Samak Sundaravej, is an especially hard man to defend. A ferocious rightist, Mr Samak was accused of inciting the policemen and vigilantes who slaughtered dozens of unarmed student protesters in Bangkok in 1976. On becoming prime minister following the election last December that restored democratic rule after a 2006 coup, Mr Samak chose for his cabinet some of the most unsavoury figures linked to the government of Thaksin Shinawatra, the prime minister deposed in the coup. But with the army on the streets of Bangkok again, Mr Samak is for once, if not in the right, then at least less wrong than those calling for his head.

His government is deeply flawed. But it would be wrong and dangerous if the authoritarian rabble who have seized Government House in Bangkok forced it out of office. After violent clashes between supporters and opponents of the government, Mr Samak this week declared a state of emergency in Bangkok (see article). The army chief backed his decision, but by mid-week was still ruling out the use of force to clear the squatters out. If the protesters, the woefully misnamed People's Alliance for Democracy (PAD), do succeed, democracy in Thailand—not so long ago a beacon, by Asian standards, of pluralistic politics—will be in grave danger.

Some in the crowds at PAD rallies are liberals, appalled both at the abuses of power in Mr Thaksin's government and the sad signs that Mr Samak's is no better. The PAD's leaders, however, are neither liberals nor democrats. A gruesome bunch of reactionary businessmen, generals and aristocrats, they demand not fresh elections, which they would lose, but "new politics"—in fact a return to old-fashioned authoritarian rule, with a mostly appointed parliament and powers for the army to step in when it chooses. They argue that the rural masses who favour Mr Thaksin and Mr Samak are too "ill-educated" to use their votes sensibly. This overlooks an inconvenient electoral truth: the two prime ministers had genuinely popular policies, such as cheap health care and credit.

The palace and a Burmese road to ruin

As in the build-up to the 2006 coup, PAD leaders are trying to oust a popular government on the bogus pretext of "saving" Thailand's revered King Bhumibol from a supposed republican plot. Some of the PAD protesters reportedly believe their sit-in has the crown's tacit backing. Almost anywhere else, the police would have removed them, forcibly if necessary, by now. But it is whispered that the PAD has protectors "on high"—hardline army generals and possibly figures in the royal palace (though not the king himself).

This may be nonsense; but by preventing the discussion and hence refutation of such royal rumours, Thailand's harsh, much-abused *lèse-majesté* law has the ironic effect of helping them spread.

In the official version of modern Thai history, the king is the great defender of peace and democracy, who comes to the rescue at moments of crisis. Now would seem to be one such moment: some wise words from the king could do much to defuse tension. Thais like to believe they are good at seeking compromise to avoid conflict. But there has been little sign of compromise in the past three years, and there is now the risk of a bad one. The elected government might be forced out of office to pacify the PAD's demagogues, it might be made to share power with the undeserving opposition Democrat party, which has shown little leadership while waiting for power to be handed it on a plate, or, as in Bangladesh, a civilian front might provide a cloak for de facto military rule.

It is just possible to imagine a decent compromise in which Mr Samak gives way to a more emollient figure from the ruling coalition—and the PAD and its supporters in the army, the bureaucracy and (if they exist) the royal palace accept the verdict of the people. But the PAD's leaders may well not stop until they have imposed their own, undemocratic vision of Thailand. In this sense they are even more pernicious than the coupmakers of 2006, who at least promised to restore elected government and, under popular pressure, did so.

Prosperous, modern and open, Thailand has so far inhabited a different era from the dark ages in which its dismal neighbour, Myanmar, languishes under a thuggish, isolationist junta. Thailand's foreign friends should make clear to the Thai elite that toppling elected governments would be a step backwards. As Myanmar has found, it might also court sanctions. Foreign tourists, seeing the unchecked disorder on their television screens, including blockades of some airports, may soon be imposing a boycott of their own.

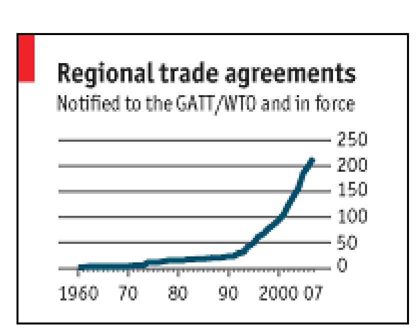


Regional trade agreements

A second-best choice

Sep 4th 2008
From The Economist print edition

India's new trade deal is a good example of why bilateral trade deals are less useful than multilateral ones



JUST over a month ago, India dealt the multilateral trading system a blow by saying "no". Kamal Nath, India's trade minister, helped kibosh a breakthrough in the Doha round of global trade talks by refusing to compromise over demands for safeguard tariffs to protect more than 200m Indian farmers. To be fair, Mr Nath did not bear sole responsibility. China joined him. And America chose to put the interest of its farmers (who account for less than 1% of its GDP) above those of the liberal trading system it helped to create.

Now Mr Nath has said "yes". On August 28th India agreed a free-trade agreement with the ten fast-growing countries in the Association of South-East Asian Nations. ASEAN also announced a second big regional deal, with Australia and New Zealand. Coming so soon after Doha's collapse, the two agreements sent a powerful message. The global trade talks may have stumbled, but regional pacts are pushing ahead, particularly in the fastest-growing part of the world economy. According to the World Trade Organisation (WTO), over 200 regional and bilateral agreements are in place with many more under negotiation. More than 100 came into force during Doha's seven exasperating years.

That is disturbing. Every trade deal should be measured on its own merits. But, for all their political appeal, bilateral and regional deals are never a substitute for progress at the WTO. Multilateral trade rounds are the foundation of the trading system because they are based on the "most favoured nation" principle—that any tariff cuts offered to one country must be offered to them all. Regional and bilateral deals are based on discrimination. They lower tariff barriers between their signatories, but not everyone else. Discrimination means that, although regional deals create new trade among their members, they may also divert it from lower-cost outsiders.

To keep outsiders at bay, regional trade deals have complicated rules about the origin of goods that qualify for lower tariffs. Central American trousers do not win preferential access to America's markets, for instance, if they are cut from cloth made in China. Because the growing patchwork of these deals have widely different rules, the simplicity and predictability of a single global trading system is being superseded by what Jagdish Bhagwati, an economist and a long-standing foe of regionalism, has called the "spaghetti bowl" of preferential deals. Not all such deals are equally bad. Some, including ASEAN's own internal trade agreement, have liberal rules of origin. Nonetheless, it makes no sense to endorse regionalism at the expense of a better multilateral system.

Building blocks or stumbling blocks

The big question is whether that is a false choice. Regionalism's critics contend that preferential trade deals are not just inferior to multilateral trade, but that they also undermine its foundations. In a new book Mr Bhagwati calls them "termites in the trading system". He argues that regional deals make countries less likely to agree to global tariff cuts, since freer global trade would erode the narrow gains they have won. His opponents argue that regional deals can strengthen exporters' political clout, so raising the odds of freer global trade.

In fact, the evidence is mixed. One study argues that America cut multilateral tariffs more slowly on goods to which it had extended preferential access. A new analysis reaches the opposite conclusion for Latin America. The history of the past two decades suggests the two can coexist. Multilateralism has hardly been moribund as regional deals have mushroomed. The Uruguay round of global trade talks ended, the WTO came into being and the Doha round began.

The hitch with this reasoning is that with Doha floundering and preferential deals proliferating, regionalism now has the upper hand; the two are no longer marching in tandem. India’s new deal, for instance, opens markets for its exporters (reducing their incentive to fight for Doha) but protects its farmers. Everyone with a stake in the global trading system has a part in reversing that trend. Rather than pursuing this sort of deal, India should start by saying yes to Doha—and soon.

On airport hubs, religion, medical tourism housing, food and presidential candidates

Sep 4th 2008
From The Economist print edition

Flight patterns

SIR – Your article about the Competition Commission's report on BAA did not recognise that airport hubs depend on transfer passengers and that these "network effects" cannot be split without huge economic cost ("A new departure for London's airports", August 23rd).

For example, imagine two passengers on an aircraft flying from Edinburgh, one whose final destination is Denver and the other whose final destination is Bangalore. Both would fly to Heathrow and transfer to their respective long-haul flights. With good load factors, all three routes (Edinburgh, Denver and Bangalore) are sustainable. Imagine next that inadequate capacity at Heathrow forces one of the routes to be flown from Gatwick. The two Edinburgh passengers cannot then fly together. As a result, the Edinburgh to Heathrow flight is no longer viable and the Edinburgh passengers transfer instead through another European airport.

Some would say at this point: "So what, the transfer traffic makes no contribution to London". But in fact the chain of reaction does not stop there. Without the transfer traffic, the viability of the direct flights from Heathrow to Denver and Bangalore also suffers, so the flights are rerouted to originate in Paris and all their passengers transferred to that airport. London's network shrinks and Paris flourishes. The illustration is simplistic, but network effects are real. Businesses that value connections to global markets will weigh this aspect in their decisions about employment and investment, and over time some will turn away from London and Britain.

Colin Matthews Chief executive
BAA
London

SIR – Your remedy for the aviation industry seems to be to allow airports to charge more, and then rely on airlines to switch to competing airports if they don't like it. But as the Competition Commission noted there is little spare capacity at London's airports, so airlines don't have any real choice. Even if the airports were separately owned we would still face local monopolies; hence our support for the commission's conclusions on the need for better regulation.

Moreover, easyJet does not want to fly from "cheap and basic warehouses". What we want are terminals that are built around our passengers' needs. This means minimising the time it takes to get from curb to gate when designing an airport terminal (which is different from a shopping mall) even if some people seem to think this is too much to ask for.

Andy Harrison
Chief executive
easyJet
Luton, Bedfordshire

Religious understanding

SIR – Does the Rev Edward Franks think that Anglicanism is the only Christian institution with a "select or leave whatever you want" theology (Letters, August 23rd)? Liberals within the Anglican tradition are often castigated for promoting an exegesis that is open, tolerant and inclusive. Other denominations such as Baptists and Pentecostals, particularly in parts of America, interpret the Bible in other ways, casting aside the commands of "Love thy neighbour" and "Do not judge" in favour of verses that supposedly condone the use of guns, the execution of felons, the bombing of abortion clinics and the erosion of

women's rights.

Ultimately, the Bible is a text for which one is inevitably required to operate a "select or leave" policy. Its core message is one of love and tolerance, but there are also orders to force women to be silent in church and to burn at the stake anyone who wears clothes composed of different fibres.

Members of the Anglican Communion, and indeed all churches, would be wise to take St Augustine as their guiding light; any interpretation of the scriptures must conform to the principle of compassion. If all the Anglican church, and indeed the wider Christian community, has to offer in the 21st century is bigotry, sectarianism and intolerance, then Richard Dawkins will not be the only one cheering religion's downfall.

Maddy Fry
Oxford

The spread of germs

SIR – In addition to providing financial benefits, new jobs, and work for migrating doctors, medical tourists may bring a less expected, less welcome situation: resistant bugs ("Operating profit", August 16th). A study published in 2006 by a group from the Karolinska Institute in Sweden found that more than 25% of its domestic cases of methicillin-resistant *Staphylococcus aureus* (MRSA) were caused by infection from abroad. As patients start travelling more frequently and to a wider extent geographically for medical treatment they are at risk of exposure to bacteria with atypical patterns of resistance relative to those found in their host country. This suggests we should start planning for well-organised screening programmes, paying particular attention to patients making transient visits.

Mark Sugi
Los Angeles

Home truths

SIR – There is a key difference between the current housing bust in the United States and previous ones ("Home economics", August 16th). In previous cycles the problem was excessive house-price inflation. "All" that was needed to get the market going was therefore for house prices to fall to levels where people could start to buy homes again. By contrast, the present slowdown is to a significant extent due to excess household-debt accumulation.

Lower house prices are not enough to get households to buy homes. They must also be capable of taking on more debt. Currently they lack the capacity and inclination to do so, even if banks would be willing to lend to them, which, as the Federal Reserve's latest senior loan officers' survey shows, is doubtful. The housing market will remain weak for quite some time.

Gabriel Stein
Director
Lombard Street Research
London

Hot dog in a pun

SIR – I find it hard to believe that John McCain wolfs down "culturally significant…'Pronto Pup' deep-fried hot dogs in Grand Haven, Michigan…with apparent relish" ("No surrender", August 30th). I grew up near Grand Haven, and can safely say there is no relish served with a Pronto Pup. When ordering you are asked whether you would like ketchup and/or mustard slathered on the delicious delicacy before it is handed to you. During no part of this process is relish available or discussed.

Walter Grafton
Arlington, Virginia

SIR – Please clarify the connection between arugula, a leafy green, and Barack Obama's presidential campaign ("Explaining the riddle", August 23rd). I am aware that journalists once spotted Mr Obama eating an arugula salad for lunch. However, I am not gaining any insight into the presidential race due to its weekly mention. If you insist on using arugula-based commentary week after week then please develop a connection between Republican politics and some other vegetable that we can chew on. May I suggest the soyabean? It is low in nutritional value, lacks flavour and is hard to digest.

Matthew Wasowski
Boulder, Colorado

The West and Russia

Cold comfort

Sep 4th 2008
From The Economist print edition

The European Union unites in rather mild and belated criticism of Russia's war in Georgia

Jupiter Images



DEPENDING where you live in Europe and whom you blame for the Russian-Georgian war, the European Union's emergency summit meeting on September 1st was a triumph, a failure or just the best that could be expected. Against objections from some Russia-friendly quarters, chiefly Italy's prime minister, Silvio Berlusconi, the EU condemned Russian actions in Georgia, agreed to step up efforts to help ex-Soviet countries under threat and blocked talks on a new partnership deal.

Even agreeing that was tricky. Britain had been demanding a "root and branch" re-examination of the EU's relationship with Russia—a critical viewpoint shared with Poland, the Baltic states and Sweden, whose foreign minister, Carl Bildt, has explicitly compared Russia's tactics with Germany's in the 1930s. Most of the big European countries are a lot more cautious. They blame Georgia, seen as an irresponsible American protégé, for starting the war but object to Russia's precipitate diplomatic recognition of Georgia's two breakaway territories, South Ossetia and Abkhazia, and the lingering Russian military presence in buffer zones. Above all, they are glad that a row with an important trading partner has cooled.

The hope is that France's president, Nicolas Sarkozy, who is visiting Russia on September 8th, will bring back agreement on a Russian withdrawal in accordance with the ceasefire he brokered. Russia's president, Dmitry Medvedev, has promised this on at least four occasions. But Russia's prime minister, Vladimir Putin, has declared that the port of Poti, a long way from the separatist regions, is part of Russia's self-declared "security zone". His spokesman, Dmitry Peskov, said that Russian troops (now labelled peacekeepers) would maintain their "temporary presence". Even so, optimists think that it will soon be business as usual, particularly as Russia starts to count the economic cost of the war, which has sent shares plunging and encouraged capital flight.

Maybe, but what is happening in practice is another story. Even the details of implementing the ceasefire are unclear. One reason is that the document itself is so vague. Veterans of the many ceasefire negotiations during the wars in former Yugoslavia in the 1990s were aghast when they saw the text, which exists in multiple inconsistent versions and lacks the vital specifics of dates and placenames, leaving far too much wiggle room. Russian officials now say that their forces will move back only when Georgia also abides by the agreement as they define it. They are demanding that Western countries observe an arms embargo on Georgia, the "aggressor" party. That leaves plenty of scope for quibbling and delay.

A second problem is the role of the international monitors from the EU and the Organisation for Security

and Co-operation in Europe, a Vienna-based international body that supposedly defuses the continent's conflicts. Will these people be allowed to move freely inside all of what the West regards as Georgia, including South Ossetia and Abkhazia where Russian-backed militias are engaged in purges of the ethnic Georgian population? Russia, at present, says that it is too dangerous to allow this. But if they are allowed in, on what terms will that be? Foreign journalists and diplomats are repeatedly told that they need documents issued by the separatist authorities—or in some cases, as shockingly happened to the French ambassador to Georgia, Russian visas. Georgia and its allies will vigorously resist the application of such rules to international officials.

It is still unclear what Russia really wants in Georgia—or elsewhere. In Moscow, the mood is defiant, unrepentant and uncompromising. Mr Medvedev and a raft of top officials have scoffed at talk of serious punitive action. "Bring it on" appears to be their devil-may-care mantra. Convinced that the days of a unipolar Washington-centric world are dead and buried, Russia believes it has a privileged place at the top table of a fast-changing multipolar world. Any attempt to mete out punishment will backfire. "The G8 will be practically unable to function without Russia," Mr Medvedev calmly told Italian television. "That's why we don't fear being expelled." On NATO's freezing of ties with Russia, he remarked: "We don't see anything dramatic or difficult about suspending our relations…But I think our partners will lose more from that." Unmentioned but clearly meant was NATO's reliance on Russia to supply its forces in Afghanistan.

The EU's mild rebuke and tentative sanctions brought an outright welcome. The freezing of talks on a new deal with the EU, already much delayed, is seen as of little importance. Though junior officials expressed irritation at "biased statements" in the EU declaration, Mr Medvedev hailed the union's avoidance of real sanctions as "reasonable" and "realistic". The president seemed to put all disagreement with Russia down to a temporary misunderstanding: it was "not fatal" because "things change in the world."

Political corpse

But not, it seems, as far as talks with the Georgian leadership is concerned. "President [Mikheil] Saakashvili no longer exists in our eyes," said Mr Medvedev. "He is a political corpse." Russia's foreign minister, Sergei Lavrov, advised Europe to decide its policy towards Russia based on its own "core interests" (ie, without America) in a speech larded with snide remarks about American arrogance and unilateralism. "The phantom of the Great Game wanders again in the Caucasus," he said. If America and its allies chose to side with what he called "Saakashvili's regime" it would be a "mistake of truly historic proportions".

That fits with earlier Russian demands for a change of Georgian leadership. Russia has said that its prosecutors are collecting evidence in South Ossetia with which to indict Mr Saakashvili as a war criminal. Many of Georgia's Western friends would be delighted if someone with an easier personality (and greater readiness to listen to advice) were in charge. But they want that to happen as part of Georgia's normal internal politics, not as a putsch dictated by Moscow. As the box on the last page of this section points out, Georgian politicians now think the same.

The double-act between Mr Medvedev and Mr Putin creates extra scope for manoeuvre. Mr Medvedev promises to calm things down. Then Mr Putin stirs them up again, accusing in all seriousness the Bush administration of staging the war to boost John McCain's election chances.

Part of the motive for the war may have been to distract attention from problems inside Russia, such as inflation, corruption, squabbling inside the circles of power and the failure to distribute fairly the proceeds of the oil and gas bonanza of past years. As the oil price falls towards $100 a barrel, the focus on that will sharpen.

It is hard to avoid the conclusion that the most unpleasant side of Russian politics is leaking to its near neighbours. Over the weekend, Mr Medvedev said that protecting the lives and dignity of Russian citizens abroad was an "unquestionable priority", as well as protecting the interests of Russian businesses there. He also spoke of "countries with which we share special historical relations" where Russia has "privileged interests". Though Mr Medvedev stressed the need for friendly relations, he also implied that such countries might not have the option of following policies that Russia deemed unfriendly (such as wanting to join NATO or host American bases). It would have been hard to find anything more likely to make the fears of Russia's neighbours seem justified, to stoke Western support for them and to undermine those who think that Russia will soon return to "normal".

Diplomatic support for Russia has been scanty, even among close allies. No country, Russia apart, has given the two statelets formal diplomatic recognition. Belarus and Tajikistan say they will do so, but the

former, which is being squeezed by Russia over energy supplies, spoke in notably lukewarm terms and only after Russia's ambassador to Minsk decried the government's "incomprehensible silence".

Perhaps most significant has been the critical reaction from the intergovernmental Shanghai Co-operation Organisation, which Russia has been building up as a counterweight to American influence. A statement from its meeting last week supported Russian peacekeeping efforts but stressed the importance of territorial integrity and the peaceful resolution of conflicts. This was a clear snub that showed a startling lack of support for Russia's actions both from the four Central Asian members of the SCO and from China.

Chill from China

China's leaders have enjoyed unnerving America by flirting with Russia, but this has always stopped well short of any hint of confrontation. Although China's state-run media has avoided criticising Russia, and has highlighted the West's discomfort at Georgia's defeat, China's official position on Russia's recognition of the breakaway regions has been surprisingly chilly. A Chinese spokesman said his country was "concerned" and called for "dialogue and consultation". That reflects both China's pragmatic desire for good economic relations with the West, and also its dislike of both separatism and interference in other countries' internal affairs. With Tibet, Taiwan and restive Muslims to contend with, China takes a dim view of anybody chopping up other countries and declaring the results to be independent states.

The same thinking has marred Russia's image in normally friendly countries such as Greece and Cyprus (which bristles about the Turkish-backed "pseudo-state") and Spain (which is twitchy about Basque and Catalan separatism). All this suggests a degree of miscalculation in Moscow. Over the past decade, the future of South Ossetia and Abkhazia was a useful bargaining chip. Now it has been cashed in, without much benefit.

Cooking up new Russia policies will take time. The result may well not be to the Kremlin's taste. "We are back to square one," says Alexander Stubb, Finland's foreign minister. Many Western countries are now reassessing their relations with Russia in ways that range from the need for higher defence spending to a reduction in dependence on Russian energy. Mr Sarkozy says that France, which holds the EU presidency, will launch a big new defence initiative in October.

The EU is better at giving carrots than wielding sticks. It will find it easier to provide generous support for the reconstruction of Georgia than do anything that might be seen as punishing Russia. Even so, timid as this response may seem, it is also something of a watershed: for the first time the EU's 27 countries got together and agreed on sharp public criticism of Russia.

The United States has announced a $1 billion aid package for Georgia. The International Monetary Fund has agreed to lend the country $750m. Underlining Georgia's importance as an energy corridor, America's vice-president, Dick Cheney, visited the region this week. He hopes to get Azerbaijan to commit gas exports to the €8 billion ($11.5 billion) Nabucco project, which extends a gas pipeline to Europe from Georgia and Turkey. But Nabucco's chances are looking increasingly slim. This week Russia stepped up its energy diplomacy, agreeing on a deal with Turkmenistan and Uzbekistan on a new pipeline via Russia that would entrench the Kremlin's hold on east-west gas supplies. Though the EU is Russia's largest customer, individual countries' dependency (see chart) has undermined the union's collective bargaining power.

America is also supporting Georgia's demand for a tough non-recognition policy towards South Ossetian and Abkhaz independence. Companies doing business in the two self-proclaimed countries will find that their managers and shareholders cannot get American or European visas, officials say. But will big European countries such as Germany go along with that? Outsiders will be scrutinising closely the atmosphere at the annual German-Russian intergovernmental meeting in October—an occasion normally marked by warm rhetoric about the two countries' mutual interdependence.

The mood in NATO is noticeably more hawkish than in the EU. A

senior official says that the days when it was regarded as “taboo” to discuss any military threat from Russia in the alliance’s contingency planning are all but over. When NATO defence ministers meet in London on September 18th, a big question will be how to defend existing members, chiefly the Baltic states, which are small, weak and on Russia’s border. Estonia, Latvia and Lithuania joined the alliance in 2004, when such questions were dismissed as too theoretical to worry about (or alternatively too provocative to consider). Now they are unavoidable.



Minorities as ammunition



Russians abroad

Ethnic Russians and Russian passport holders
% of total population

	Ethnic Russians	Russian passport holders
Kazakhstan	29.9	na
Latvia	28.0	2.0
Estonia	25.6	6.8
Ukraine	17.3	na
Belarus	11.4	na
Moldova	5.9	na
Lithuania	5.2	0.6

Source: Latest available national statistics

The potential flashpoint, as with the war in Georgia, is a legacy of the Soviet Union (see table). Russia says that the language and citizenship laws in Estonia and Latvia discriminate against Russian-speakers. The hundreds of thousands of people (mainly from Russia) who moved to these countries during the Soviet occupation did not automatically become citizens when Estonia and Latvia regained independence. Many were naturalised in the 1990s, and a steady trickle continue to pass the language exams and apply for citizenship. But an alienated minority of stateless people, and tens of thousands who carry Russian passports, are a potential nightmare for the Baltic states and their friends. Disturbances in the Estonian capital, Tallinn, last year over a clumsy government decision to move a Soviet war memorial inflamed feelings that have not yet subsided.

Lithuania’s problems are different (it has a small Russian minority which gained automatic citizenship in 1991). But it is a transit route for Russian troops to the exclave of Kaliningrad. That offers plenty of scope for provocation. Russia has cut off oil supplies, ostensibly because the pipeline is decrepit (but has refused a Lithuanian offer to pay for its repair). And populist parties led by politicians with strong Kremlin links are doing well in the run-up to a general election in October.

The Baltic armed forces are tiny and are configured to support NATO efforts in faraway countries such as Afghanistan, not to defend the region against a real attack from Russia. NATO’s military presence consists only of a handful of fighter aircraft (currently four from Germany) based at an air base in Lithuania. It also has a cyber-defence centre in Estonia, and all three countries have NATO-standard radars that can look deep into Russia.

Getty Images



Diverging footsteps

Beefing that up without feeding Russian paranoia will be tricky. “Don’t expect a fanfare,” says the NATO official. “We will do it in a low-key, professional way.” The Baltic states themselves will be expected to spend more on defence—no easy task as a sharp economic slowdown bites.

Another question for NATO is how much help to offer in restoring Georgia’s armed forces. Although Western military advisers have been surprised, and even scandalised, by the poor showing of the Georgian army, which retreated in poor order, dumping huge quantities of donated American equipment and ammunition, Georgia itself is optimistic about rebuilding it.

The other country most threatened by Russia is Ukraine. Mr Putin said in April that it risked dismemberment if it tried to join NATO, and opinion inside the country is deeply divided on the issue. Politics is unstable too: this week Ukraine’s

president, Viktor Yushchenko, threatened to call a snap election to defend himself against what he termed a “putsch” by parliament, which wants to strip him of his powers. The West will tread gingerly into that, though NATO may step up its fairly uncontroversial defence training activities.

Yet NATO is barely less divided than the EU. It is not just that European countries blocked the American plan to give Ukraine and Georgia a clear path to potential membership at the alliance’s summit in April. Turkey, the most important NATO member in the Black Sea region, is torn between the competing claims of strategic partnership with America and its strong trading links with Russia (which supplies most of its gas). Although Turkey has helped to train Georgia’s armed forces (evidently not very successfully), it did not share radar and other military data with Georgia during the series of pinprick attacks by Russia that preceded the full-scale war.

Turkey is pushing its own regional initiative, involving Russia and the Caucasus countries but not America. That might help settle another lingering conflict, between Armenia and Azerbaijan. But Georgia regards anything that excludes the United States as unacceptable. For now, the hottest issue for Turkey is whether to allow America to send more warships through the Bosporus straits into the Black Sea, something that Russia vigorously opposes.

Having caught the West napping (or at least on holiday), Russia scored a pleasant victory over a weak and unpopular adversary. But now it has to deal with the consequences: war fever at home plus alienated allies and stronger critics abroad. Will Russia’s leaders respond to this by raising the stakes, in the hope of showing their opponents’ underlying weakness? The West’s leaders worriedly hope not.

The north Caucasus

Murder as problem solver

Sep 4th 2008
From The Economist print edition

Russia could find that it is getting more than it bargained for



EVEN by Russia's recent bloody standards, it was a brazen killing. Magomed Yevloyev, the editor of an opposition website in Russia's north Caucasus territory of Ingushetia, was detained by the police as he arrived in Nazran on a flight from Moscow on August 31st. Within minutes he was dead, having allegedly tried to seize a policeman's rifle and been shot in the head. His body was dumped outside the region's main hospital.

The Ingush authorities say they are investigating an accidental death but nobody takes this seriously. There were reports that Mr Yevloyev quarrelled with the region's president, Murat Zyazikov, who was on the flight. Ingushetia's interior minister, Musa Medov, is said to have personally supervised his arrest. Memorial, a Russian human-rights group, called the killing a "demonstrative and cynical crime" and "act of state terror".

For the past 17 years, the north Caucasus has been Russia's poorest and most violent region. Now Russia's war in Georgia may have triggered a new cycle of repression and resistance. The focus of concern is not so much Chechnya, which is in a state of precarious calm thanks to the local strongman, Ramzan Kadyrov, well known for his use of both violence and bribery to crush opponents. Chechnya's immediate neighbours to the east and west are now the ones to be worried about.

Dagestan is increasingly ungovernable and violent. A leading opposition politician, Farid Babayev, was murdered last year. This week a journalist, Abdulla Alishayev, died after being shot by unknown assailants. Ingushetia itself is close to boiling point. Many Islamist militants decamped there from Chechnya and 70 policemen have been killed this year. The authorities are waging a dirty war of reprisals in which civilians are the main victims. Memorial estimates that there were 40 extra-judicial killings in Ingushetia last year.

Ingushetiya.ru, Mr Yevloyev's website, had become a rallying point for opposition to the president, an ineffectual ex-KGB officer installed by Moscow. It riled Mr Zyazikov with a campaign called "I did not vote", collecting 90,000 signatures to disprove the official boast that 98% of Ingush had voted for the Kremlin's party in a near-universal turnout at last year's parliamentary election.

Russia's victory in Georgia looks rather different to the Ingush who were the losers in a small nasty territorial conflict with North Ossetia in 1992. As a result of this thousands are still unable to go home. Many resent what they see as Moscow's overt patronage of the mainly Christian Ossetians, now reinforced by the recognition of an independent South Ossetia. "We need to ask Europe or America to separate us

from Russia," cried an Ingush opposition leader, Magomed Khazbiev, at a protest against the killing of Mr Yevloyev that was later broken up by the police.

Georgia after the war

Nervous interval

Sep 4th 2008 | GORI AND TBILISI

When still under part occupation, it's wiser not to play at politics

WORKMEN are busy, hammering away at the Gori apartment blocks smashed by Russian rockets, unloading roofing materials from lorries and installing windows. But making good the physical damage is a small part of Georgia's problems. On the outskirts of town a small tent city has been thrown up by the UN's refugee agency (UNHCR) and its miserable inhabitants have no idea when, or even if, they are going home.

Two weeks ago Gori was a ghost town, occupied by Russian troops. Then the Russians pulled out and now most of its people have returned. But the Russians have not gone far. They have withdrawn only 4km (2½ miles) up the road to the village of Karaleti where a small base has been built behind earthwork ramparts. About half of Karaleti's people have come back, says a local, but farther north, in the Russian-controlled zone stretching 23km to the border of Georgia's breakaway province of South Ossetia, almost the entire population is believed to have fled or been ethnically cleansed.

The UNHCR says that of the 4,200 displaced people in Gori, some 600 come from the destroyed flats. The rest come either from former Georgian-held villages in South Ossetia or from the Russian "security zone", where paramilitaries and thugs have been looting and burning houses. Some of the refugees say that they have ventured north to check on their houses but did not feel safe enough to stay.

On September 1st hundreds of thousands of Georgians joined together in anti-Russian protests. They formed a human chain in Gori and marched towards Karaleti. A Russian soldier at the checkpoint told Tsisana Tabadtadze, a Georgian refugee from South Ossetia who was haranguing him, that he came from Yaroslavl, 250km north-east of Moscow. "You flattened Chechnya and now you want to do the same to Georgia," she shrieked. He replied that he would be happy enough to go home.

Russia's president, Dmitry Medvedev, may have thought that by calling Mikheil Saakashvili "a political corpse" this week he would hasten the Georgian president's downfall. In fact, his attack has had the opposite effect. "The phobia of being accused of serving Russian interests in this country is pretty strong," says Tina Khidasheli, a leader of the opposition Republican Party. She agrees that Mr Saakashvili has much to answer for, but says, as do other opposition figures, that "now is not the best time to ask questions." So, for the moment, she says, there will be no calls for his resignation. But the country is volatile and that could change soon, especially if Georgia faces a tough winter plagued by power cuts and a post-war economic crisis.

Alex Rondeli, a veteran foreign-policy analyst, believes that when the time is right the Russians may well unearth someone more amenable to lead Georgia. "They are going around like snakes," he says of certain Georgian politicians he will not name. "Their enemy is weakened and a weakened enemy is a good target." Still, he adds, most Georgian leaders understand that it is not in the country's interests to discuss replacing Mr Saakashvili right now. After all he says: "We are still under occupation and the war has not ended, except maybe for the Western media."

The Republican convention

The maverick and the hockey mom

Sep 4th 2008 | ST PAUL
From The Economist print edition

Bloomberg



Republicans are more fired up than before, but less so than Democrats

BEFORE Barack Obama's big open-air speech in Denver last week, some Christian conservatives prayed for rain. That was in poor taste. But this is a competitive election, and anything the right can do, the left can do better. When the news came that a hurricane might strike New Orleans during the Republican convention in St Paul, Minnesota this week, Michael Moore, a film-maker, said it was "proof that there is a God in heaven". Another calamitous storm, you see, would remind people how ineptly George Bush dealt with Hurricane Katrina three years ago and spur them to vote Democratic.

The first day of the convention, September 1st, was all but cancelled—though, in the end, the hurricane was less destructive than had been feared (see article). That left three days for Republicans to achieve three goals. They needed to distance John McCain from Mr Bush, to introduce Sarah Palin (Mr McCain's surprise vice-presidential pick) to voters and to denigrate Mr Obama. Strangely, Hurricane Gustav may have helped. The storm gave Mr Bush a good reason to stay away on the first day. During a brief video link-up, he generously stressed the times Mr McCain has disagreed with him.

To boost their nominee, Republicans played all the familiar tunes. Videos hinted at parallels with previous presidents: Teddy Roosevelt, the war hero, and Ronald Reagan, who faced down the Soviet Union. Fred Thompson, a gravel-voiced actor, former senator and unsuccessful presidential candidate, praised Mr McCain's courage during two years of solitary confinement where the heat caused "boils the size of baseballs under his arms". "It's pretty clear," said Mr Thompson, that "there are two questions we will never have to ask ourselves: 'Who is this man?' and 'Can we trust this man with the presidency?'"

The highlight of the first full day was an independent Democrat who got the crowd cheering for Bill Clinton, of all people. Joe Lieberman, who was Al Gore's running-mate in 2000, listed what happened when Mr Clinton stood up to his own party's interest groups and worked with a Republican Congress: welfare reform, free-trade agreements and balanced budgets. Mr Obama, by contrast, "has not reached across party lines to get anything significant done". John McCain had done it "over and over again", said Mr Lieberman, citing his friend's struggles with his own party over campaign-finance and immigration reform. This speech provoked howls of "traitor" from Democratic bloggers, but cheers from the floor.

The week's biggest buzz surrounded Mr McCain's little-known running-mate. Delegates waxed ecstatic

about Mrs Palin, the governor of Alaska. Social conservatives, who have reservations about Mr McCain, immediately sensed that she is one of them. Christians applauded her piety, gun-lovers her love of guns and pro-lifers the Down's syndrome baby she calls "perfect". And nearly everyone warmed to her moose-skinning authenticity. "I give her extreme credit for being a mother of five and a governor. I'm a mother of five. And I can barely keep milk in the house," said Kelley McDonald of New Jersey.

All week Democrats hammered Mrs Palin for her lack of experience of national or international politics. Republicans retorted that, as a governor and former mayor, she has more executive experience than Mr Obama and Joe Biden combined. Speaker after speaker contrasted Mr Obama's record of rubbing along with machine politicians in Chicago with Mrs Palin's record of confronting corruption within her own party. But everyone knew that picking her was a risk. "You're not a [bomber] pilot if you don't take risks," said Mike Huebsch, the Republican speaker of the Wisconsin assembly.

On September 3rd the "hottest VP from the coolest state," as the badges put it, took the stage. She seemed a trifle nervous and unsure of the teleprompter. But the audience loved her. She spoke of her union-member, snowmobile-champion husband and her five children, including one who is about to deploy to Iraq.

She accused Democrats of looking down on small-town mayors. "Let me explain to them what the job involves," she said. "I guess a small-town mayor is sort of like a community organiser, except that you have actual responsibilities." She boasted of vetoing half a billion dollars in wasteful spending as governor and selling the former governor's jet on eBay. There was much to admire about Mr Obama, but she chided him for having written "two memoirs but not a single major law".

Since voters say they care most about energy, and since she governs an oil state, she spoke about it at length. She scoffed at Democrats who oppose drilling for oil on the ground that it won't solve all America's energy problems—"as if we didn't know that already"—and promised to promote nuclear, solar, wind, geothermal energy and clean coal, too. The crowd chanted "Drill, baby, drill!"

The Economist went to press before Mr McCain's speech on September 4th. Both he and Mr Obama say they want to unite their country, but their two parties' conventions showed a gaping cultural gulf. In Denver abortion-rights advocates handed out condoms with the logo "Protect yourself from John McCain", while Obamaphiles wore badges that substituted "Obama" for "God" in the motto "In God We Trust". Evangelicals in St Paul sighed that secular Democrats probably did not realise how offensive this was.

Outside the Republican convention, largely peaceful protests were marred by a few thugs who smashed windows. More violent disruptions were avoided, however, because police informants infiltrated a gang of anarchists who were allegedly planning them. Police seized weapons and buckets of urine, apparently intended for throwing at people. Lawyers for some of those arrested demanded the return of their possessions. "Who should we return the urine to?" asked the judge, according to the *Star-Tribune*, a local paper.

Ron Paul's campaign

Another old Republican

Sep 4th 2008 | MINNEAPOLIS AND ST PAUL
From The Economist print edition

A boisterous alternative convention targets NAFTA and the Fed

Bloomberg



Cheers for a pariah

HIS movements were monitored by Republican organisers, and his supporters were muzzled at the Republican convention. Michael Moore, a rabble-rousing lefty film-maker? A surrogate for Barack Obama? No: Ron Paul, a Republican congressman. His campaign for restoring limited government did not win him the Republican nomination for president. But it did earn him a legion of adoring fans who gathered for a huge counter-convention in Minneapolis, across the river from the official Republican convention in St Paul, in a 15,000-seat basketball arena.

In the arena, the fans booed mentions of John McCain and George Bush. But they boisterously cheered the names of Friedrich Hayek and Murray Rothbard, libertarian economists from decades past. Any favourable mention of guns or the constitution won cheers; but hard words for the Iraq war gained the biggest roars of approval, and speaker after speaker hit themes of personal responsibility and small government.

The movement has its dafter elements, too. The Federal Reserve is a subject of intense hatred for Mr Paul and his fans, who want to disband it. (The candidate prefers the gold standard, though he does not think the Fed can be got rid of immediately.) There is heated fear of a "North American Union" between America, Canada and Mexico. This was called for in a mostly forgotten paper by the Council on Foreign Relations, an independent think-tank, but is the subject of much conspiracy theory among those Paulites who think the council is a secret cabal.

The former candidate, perhaps surprisingly for a man who cannot walk freely around the Republican convention, still considers himself a member of the party: "I'm an old Republican," he says: a small-government conservative, not often seen these days. The new Republicans, he seems confident, will come back to him. Although the national party treats him like a pariah, he says individual congressmen around the country are seeking his supporters to survive in what looks like a bad year for Republicans.

But Mr Paul absolutely refuses to endorse Mr McCain, or Mr Obama, or even the Libertarian candidate, Bob Barr. Another outfit without prospects, the Constitution Party, headed by Chuck Baldwin, is more obscure; but Barr and Baldwin shirts can be seen around Mr Paul's rally. Mr Paul will not tell anyone how to vote. Asked if he has left any mark on the Republican Party, he says he hasn't read the platform. Many of his supporters, however, expect to take it over eventually.

Examining Alaska (1)

From pork to petrodollars

Sep 4th 2008 | ANCHORAGE
From The Economist print edition

Sarah Palin's home state is awash with money

JOHN MCCAIN'S decision to anoint Sarah Palin as his running-mate looks eccentric for many reasons. Not the least is economic principle. Thanks in part to Mrs Palin, Alaska's economy is built on two things that Mr McCain has spent the last few years railing against.

The first is federal spending, especially the little-scrutinised grants known as earmarks. Between 1996 and 2006 per-capita federal spending in Alaska rose from 38% above the national average to 71% above. Scott Goldsmith, an economist, reckons a third of all jobs in the state depend on it. So needy are the citizens of the "last frontier" that the looming trial of Ted Stevens, Alaska's senior senator and champion pork-rustler, for failing to disclose gifts is viewed not just as a political scandal but also as an economic threat.

Mrs Palin has been less single-minded in her pursuit of pork than other Alaskan politicians (which is, admittedly, setting the bar pretty high). But she can take credit for the other pillar of Alaska's economy: windfall taxes. Last year she championed a tax hike on oil companies which is helping bring in huge sums—more than $10 billion in the fiscal year that ended in June, according to the companies that pay them. Suddenly flush, the state has promised $1,200 to every man, woman and child, ostensibly to cover the high cost of fuel.

That giveaway is just the start. Rather than paying taxes to the state, Alaskans receive cheques from it. In "The Simpsons Movie", released last year, Homer Simpson is handed $1,000 at the Alaskan border for "allowing the oil companies to ravage the state's natural beauty". That is an understatement: this month's payments from the Alaska permanent fund are expected to be about twice as big. With the fuel surplus, this alone would get a family of four three-fifths of the way towards the federal poverty line in the lower 48 states. And many Alaskans do not pay sales taxes.

Meanwhile, the state's industries hum along. Fishermen are doing well, thanks in part to a collapse in California's salmon stocks. Mining is booming. Between 2000 and 2007 about 8,000 health-care jobs were created, a lot in a state with a civilian working population of just 335,000. More and more cruise ships chug up the coast. Alaska's natives, who were given money to set up corporations in lieu of land, have proved adept at hoovering up federal contracts in the lower 48 states.

Federal grants to Alaska had begun to slow even before Mr Stevens's indictment, as Congress clamped down on earmarks. But they will not cease even if the senator is convicted. Alaska still has plenty of plans for spending taxpayers' money—the big one is a highway through Anchorage. It also has other politicians who are prepared to plead for that money (see article).

Not all federal spending comes in the form of earmarks, in any case. Retirement and Medicare cheques will roll in as Alaska's population ages. Military spending, a big part of the state's economy during the cold war, is heating up again: from the air you can see construction at Fort Richardson army base, north of Anchorage.

So Alaska's growth streak, now in its 21st year, is unlikely to break soon. But the good times obscure a big weakness. The state government has become dependent on revenues from oil, which are likely to decline as the major fields dry up. Rescue may come in the form of a huge pipeline that would run from a natural-gas field in northern Alaska to Canada. It may not be built; even if it is, the gas will not start flowing for at least a decade. Alaskans will be hoping a Vice-President Palin can move things along a little quicker.

Examining Alaska (2)

The challenger

Sep 4th 2008 | ANCHORAGE
From The Economist print edition

Running against a senator who is about to stand trial is harder than it looks

SINCE being elected mayor of Anchorage in 2003, Mark Begich has acquired a reputation for getting things done. On his watch a shiny new convention centre has gone up. Roads are being repaired and heating elements laid under pavements to melt snow during the long Alaskan winter. Miraculously, much of this has been paid for by bonds, not federal earmarks. On August 26th Mr Begich sailed through a primary election. Now all he has to do is defeat a man who will soon go on trial for failing to report gifts from oil companies and he will become Alaska's first Democratic senator for 28 years.

Four out of every ten Alaskans live in Anchorage, so Mr Begich has a strong base of support. He also has a good surname: his father, Nick Begich, was a popular congressman who disappeared in 1972 while flying in a small plane. Best of all, Mr Begich is a lifetime member of the National Rifle Association and supports drilling in the Arctic National Wildlife Refuge. Woe betide any Alaskan politician who stands in the way of guns and oil.

Yet his challenge is daunting. Mr Begich was just six years old when his opponent, Ted Stevens, was appointed to the Senate and began to shower money on his home state. Some years ago Mr Stevens was voted "Alaskan of the century". In the run-up to the primary, Mr Stevens's supporters put up more and bigger signs than Mr Begich's, even in Anchorage. It is a measure of "Uncle Ted's" popularity that Mr Begich has so far tiptoed around the federal indictment, issuing bland statements of regret. Mr Stevens's opponents in the Republican primary were much harder on him, and he beat them handily.

A day after Mr Stevens's indictment on July 29th Rasmussen, a pollster, put Mr Begich 13 points in the lead. Astonishingly, it also revealed that two-thirds of Alaskans believe Mr Stevens to be at least as ethical as most politicians. This seems to prove that Alaskans do not care much about corruption, as long as their representatives keep the dollars flowing.

Mr Begich touts his own probity, giving links to dozens of financial-disclosure reports on his website. If elected to the Senate, he says, he will devise earmarks in consultation with business and economic groups. He will be an honest scrounger of federal money, but still a scrounger. Thus has the 84-year-old Mr Stevens laid down the rules for politicians in Alaska. Corruption may be currently unfashionable but, as Mr Begich says, "Bringing the bacon home is still important."

Hurricane Gustav

Could have been worse

Sep 4th 2008 | AUSTIN
From The Economist print edition

New Orleans dodges another natural disaster

Reuters


She was told not to stay

BY THE time Nathan Reese realised that New Orleans was really being evacuated, his neighbours in St Bernard parish had already cleared out. He scraped up enough money to buy an old car, which he filled with his girlfriend, their newborn son, a cat, three kittens, and whatever clothing they could grab. It was a miserable trip. Traffic crawled. The car had no air-conditioning and it overheated. At one point Mr Reese had to sneak into a hotel outside Houston to get some ice to put on the baby. On September 2nd, the day after Hurricane Gustav made landfall, the family were sitting in a patch of shade outside an emergency shelter in Austin, unsure of their next move. “All I know is we lost everything and we’re trying to get gas so we can get up out of here,” said Mr Reese.

When Gustav formed in the Caribbean late last month, much of the Gulf coast girded for disaster. Louisiana, Mississippi, Alabama, and part of Texas were put under hurricane watch. The National Guard was activated. Emergency shelters were set up all over the South. But the biggest worry was for New Orleans. Forecasters said that Gustav was heading directly for it and would probably arrive as a Category 3 hurricane. The city is still struggling to recover from Hurricane Katrina, which hit Louisiana as a Category 3 storm three years ago and led to at least 1,600 deaths. Officials were frantic to avoid another such catastrophe. They were also keen, especially at federal level, to show that they had learnt from the last time.

Ray Nagin, the mayor, warned that Gustav would be “the mother of all storms” and ordered a mandatory evacuation. He said that anyone who stayed behind would be on his own, and had better have an axe on hand to chop his way from the attic to the roof. The city emptied out. Many people spent hours waiting for buses that would take them to shelter, without even knowing exactly where they were heading. Within a few days, about 2m people left Louisiana.

As it turned out, Gustav could have been worse. It weakened after battering the Caribbean islands (where it caused about 100 deaths). When it made landfall, 70 miles outside New Orleans, it was a Category 2 storm. Water sloshed over some levees, but they held. Eight people were reported dead, not including several who were already ill, and there was significant property damage. But these losses were small compared with Katrina.

Most agreed that evacuation had been wise all the same, though residents were becoming upset as the days went on. Swathes of Louisiana were without power, and shops were shuttered. New Orleans wanted its residents to stay away for a while; many who tried to return on September 3rd were blocked. When Mr Reese mentioned that he might return, a friend visiting him at the shelter in Austin chided him. “Why put yourself through all this stupid mess?” said Valerie Weathers. “You don’t want to keep running and running. You want to build a foundation.” Gustav could have been worse. But for the Gulf coast’s most vulnerable residents, near-disaster is near enough.

Economist.com



The economy

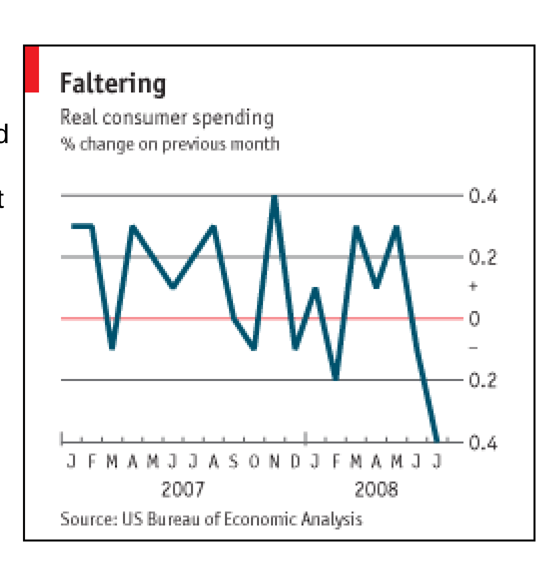
In need of more Band-Aids

Sep 4th 2008 | WASHINGTON, DC
From The Economist print edition

A poor second half could boost the odds of more stimulus

THE American economy entered the summer on a strong note as GDP grew by an annualised 3.3% in the second quarter. That figure, released last week, was much better than the first estimate of 1.9%, and mostly reflected a strong trade performance. Another important factor was that, despite rising unemployment, soaring fuel prices and constricting credit, consumer spending managed to grow at a 1.7% annual rate. For that, thank a fiscal stimulus package that included $110 billion in tax rebates, of which $92 billion had been disbursed by early July. Without those cheques, Macroeconomic Advisers, a forecasting firm, figures that consumer spending would not have grown at all.

The second half is already looking weaker. Real consumer spending tumbled at a 0.4% monthly rate in July (see chart) as car sales plunged and high oil prices bit. The drop may also have reflected a reversal of the temporary boost from rebates delivered in previous months. Economists at Bank of America think consumer spending will decline in the current quarter, for the first time in 17 years. The fourth quarter could be worse. Unemployment is probably heading higher. Housing may be bottoming, as stocks of unsold homes drop and price declines slow, but the credit crunch shows no sign of easing.



Source: US Bureau of Economic Analysis

These grim forecasts have fuelled interest in a second stimulus package. The Democratic majority in the House of Representatives has proposed a $50 billion package (about 0.3% of GDP) consisting of three parts: increased spending on infrastructure such as roads and public transport; payments to state and local governments who might otherwise have to cut services to balance their budgets; and direct assistance to families and workers, such as expanding the food-stamps programme, heating assistance and unemployment insurance.

In theory, government spending gives more bang for the buck than tax cuts because less is saved; Macroeconomic Advisers estimates that consumers spent only 30% of their rebates. But spending has its drawbacks, too. The non-partisan Congressional Budget Office (CBO) estimates that just 27% of federal highway funds and 15% of public-transport funds (most of which is spent by the states) is used in the first year after authorisation. (Democrats note that if the job market is still weak two years from now, those long lags would be welcome.) The CBO believes most of the money given to states and individuals would be spent at once, but some might be saved.

Congress will go into recess for the election at the end of this month. Prospects for the passage of fiscal stimulus before then appear slim, but could shift depending on economic data and election considerations. Senate Republicans could probably be persuaded to back a modest boost in infrastructure spending. Car companies also want $50 billion in loan guarantees for investment in more fuel-efficient cars. The Bush administration opposes both more stimulus and the loan guarantees, but may relent for political reasons.

If a package fails to pass this month, Congress will probably revisit it in January, when Democrats expect to have a larger majority in both chambers. If Barack Obama is president, he would probably support it: he has already backed $50 billion in emergency stimulus along the lines that House Democrats have proposed, and is prepared to do even more if job losses continue. (He has also proposed an “emergency energy rebate” of $500 per worker or $1,000 per family, but that would be paid for with a special tax on oil companies.) An aide says John McCain is sceptical about the value of additional stimulus, but hasn’t taken the possibility off the table.

Of course, if the economy is still on its back, it may not matter who is in the White House. “What matters more for stimulus is how the economy looks between now and the end of the year, not who wins,” says Tom Gallagher of ISI Group, a brokerage, “because the winner will probably respond in the same way.”

Swing states: Minnesota

A polka-dot place

Sep 4th 2008 | MINNEAPOLIS
From The Economist print edition

A formerly reliable Democratic state is now much less so



ON A hot summer day at Shady Oak Lake, teenagers line up for the high-diving board. Parents with small children wade in the shallows near the sandy beach. This suburban idyll, surrounded by leafy trees and big houses, lies near Edina, a town just west of Minnesota's Twin Cities of Minneapolis and St Paul. Despite appearances, it is a political ground zero in a state the Republicans are fighting to snatch from the Democrats.

Minnesota is famous as a liberal bastion. It is the only state not to have voted for a Republican presidential candidate since 1972, and has its own (traditionally leftier) brand of Democrats in the Democratic-Farmer-Labour Party. It was the land of Hubert Humphrey, a former vice-president, the Democrats' presidential candidate in 1968 and an early advocate for civil rights. Walter Mondale, another former vice-president, Democratic presidential candidate and liberal, also represented Minnesota in the Senate. But Americans probably remember the state better for some of the musicians it has produced: Bob Dylan, an enduring liberal icon, and Prince, once notorious for his raunchy lyrics. Odd, then, that the Republicans chose to stage their national convention in such seemingly hostile territory this year.

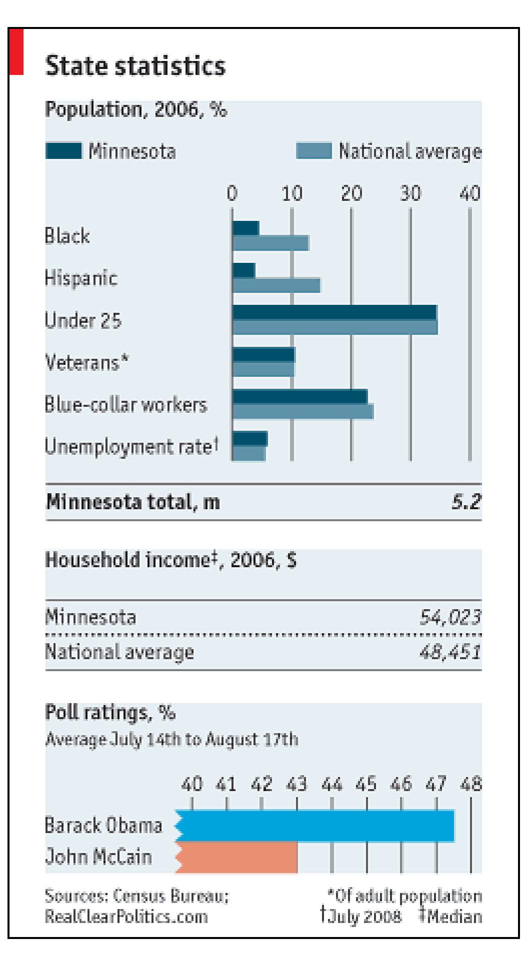
But look a little closer, and Minnesota seems a more attractive target. Presidential votes in the state have been very close lately, decided by fewer than four points. Barack Obama leads by only low single digits in most recent polls. Minnesota has a Republican senator, Norm Coleman, who beat Mr Mondale in 2002. Many predicted that the state's Republican governor, Tim Pawlenty, would be Mr McCain's running-mate. The state also tends to move along with fellow "Frost Belt" states such as Iowa and Wisconsin, with which it shares media markets. Combined, that block has as many electoral votes as Florida, a perennial battleground.

Lawrence Jacobs, a professor at the University of Minnesota, says his state isn't purple but polka-dot—polarised between Democrats and Republicans, with a large group of independents who often play kingmaker. About half of the state's people live in and around the Twin Cities, along the Mississippi River in the east. The urban core is reliably Democratic, with some big minority communities. Keith Ellison, the

first Muslim in Congress, represents a swathe of Minneapolis that hosted a fair in June boasting the world's largest map of Africa.

The cities' outer-ring suburbs, meanwhile, are deeply Republican. Residents like Doug Dugdorpat find John McCain a bit too lefty, particularly his past opposition to drilling in the Arctic National Wildlife Refuge in Alaska. (Mr Dugdorpat insists that displaced Alaskan caribou might warm themselves on the oil pipelines.) In between, the inner suburbs—such as Edina—have become swing territory. Independent-minded voters there are willing to split their tickets.

Farther away from the Twin Cities, Minnesota's north-east is home to working-class Democrats, particularly in the Iron Range, which produces some three-quarters of America's iron ore. The rest of the state is more rural and more conservative: home to farmers and what Bill Hillsman, a political adman, calls "boys with toys"—outdoorsy men who own boats, all-terrain vehicles and four-wheel-drive trucks. Republicans can find votes here, though a strong independent streak persists: in 2006 the incumbent Republican congressman lost his seat in a district along Minnesota's southern border with Iowa, showing that Democrats can be competitive in such places.



This political geography can make elections in Minnesota unpredictable, though populists of any party tend to do well. Jesse Ventura, a gruff former professional wrestler, took the governor's mansion in 1998 on the Reform Party ticket, after promising to arrive at his inauguration by helicopter and rappel down the capitol dome. He might have won a second term, but pulled out before the election. Paul Wellstone, a senator from Minnesota before he died in a plane crash, was one of the most liberal members of the Senate and swore to serve only two terms. Mr Pawlenty talks of making the Republican Party "the party of Sam's Club", a bargain store owned by Wal-Mart, "not just the country club".

Minnesota's economy has outperformed those of its neighbours to the east, the heart of America's industrial Midwest, in part because 18 Fortune 500 companies have their headquarters in the Twin Cities and their suburbs. But unemployment in the state is now at a 22-year high, which should help Barack Obama. His ground troops have been busily registering new voters in the cities.

Mr McCain's maverick image may still endear him to Minnesota's many independents. But more useful may be the spillover effects from the state's Senate race, in which Al Franken, a former comedian and liberal activist, is challenging Mr Coleman. Mr Franken has been dogged by sloppy tax-filings and the circulation of a dirty article he wrote for *Playboy*. A tough sell, perhaps, for the mothers at Shady Oak Lake, who may have to be convinced to vote for Mr Obama even while they vote against Mr Franken.

Even if Mr McCain does not carry Minnesota, his time in the region may not be entirely wasted. Next-door Wisconsin has been even closer in recent presidential elections.

Lexington

The woman from nowhere

Sep 4th 2008
From The Economist print edition

John McCain's choice of running-mate raises serious questions about his judgment

Illustration by KAL



THE most audacious move of the race so far is also, potentially, the most self-destructive. John McCain's choice of Sarah Palin as his running-mate has set the political atmosphere alight with both enthusiasm and dismay.

Mr McCain has based his campaign on the idea that this is a dangerous world—and that Barack Obama is too inexperienced to deal with it. He has also acknowledged that his advanced age—he celebrated his 72nd birthday on August 29th—makes his choice of vice-president unusually important. Now he has chosen as his running mate, on the basis of the most cursory vetting, a first-term governor of Alaska.

The reaction from inside the conservative cocoon was at first ecstatic. Conservatives argued that Mrs Palin embodies the "real America"—a moose-hunting hockey mum, married to an oil-worker, who has risen from the local parent-teacher association to governing the geographically largest state in the Union. They praise her as a McCain-style reformer who has taken on her state's Republican establishment and has a staunch pro-life record (her fifth child has Down's syndrome). Who better to harpoon the baby-murdering elitists who run the Democratic Party?

Mrs Palin was greeted like the reincarnation of Ronald Reagan by the delegates, furious at her mauling at the hands of the "liberal media". And she delivered a tub-thumping speech, underlining her record as a reforming governor and advocate of more oil-drilling, and warning her enemies not to underestimate her ("the difference between a hockey mum and a pitbull—lipstick"). But once the cheering and the chanting had died down, serious questions remained.

The political calculations behind Mr McCain's choice hardly look robust. Mrs Palin is not quite the pork-busting reformer that her supporters claim. She may have become famous as the governor who finally killed the infamous "bridge to nowhere"—the $220m bridge to the sparsely inhabited island of Gravina, Alaska. But she was in favour of the bridge before she was against it (and told local residents that they weren't "nowhere to her"). As mayor of Wasilla, a metropolis of 9,000 people, she initiated annual trips to Washington, DC, to ask for more earmarks from the state's congressional delegation, and employed Washington lobbyists to press for more funds for her town.

Nor is Mrs Palin well placed to win over the moderate and independent voters who hold the keys to the

White House. Mr McCain's main political problem is not energising his base; he enjoys more support among Republicans than Mr Obama does among Democrats. His problem is reaching out to swing voters at a time when the number of self-identified Republicans is up to ten points lower than the number of self-identified Democrats. Mr McCain needs to attract roughly 55% of independents and 15% of Democrats to win the election. But it is hard to see how a woman who supports the teaching of creationism rather than contraception, and who is soon to become a 44-year-old grandmother, helps him with soccer moms in the Philadelphia suburbs. A Rasmussen poll found that the Palin pick made 31% of undecided voters less likely to plump for Mr McCain and only 6% more likely.

The moose in the room, of course, is her lack of experience. When Geraldine Ferraro was picked as Walter Mondale's running-mate, she had served in the House for three terms. Even the hapless Dan Quayle, George Bush senior's sidekick, had served in the House and Senate for 12 years. Mrs Palin, who has been the governor of a state with a population of 670,000 for less than two years, is the most inexperienced candidate for a mainstream party in modern history.

Inexperienced and Bush-level incurious. She has no record of interest in foreign policy, let alone expertise. She once told an Alaskan magazine: "I've been so focused on state government; I haven't really focused much on the war in Iraq." She obtained an American passport only last summer to visit Alaskan troops in Germany and Kuwait. This not only blunts Mr McCain's most powerful criticism of Mr Obama. It also raises serious questions about the way he makes decisions.

Vetted for 15 minutes

Mr McCain had met Mrs Palin only once, for a 15-minute chat at the National Governors' Association meeting, before summoning her to his ranch for her final interview. The *New York Times* claims that his team arrived in Alaska only on August 28th, a day before the announcement. As a result, his advisers seem to have been gobsmacked by the Palin show that is now playing on the national stage. She has links to the wacky Alaska Independence Party, which wants to secede from the Union. She is on record disagreeing with Mr McCain on global warming, among other issues. The contrast with Mr Obama's choice of the highly experienced and much-vetted Joe Biden is striking.

Mr McCain's appointment also raises more general worries about the Republican Party's fitness for government. Up until the middle of last week Mr McCain was still considering two other candidates whom he has known for decades: Joe Lieberman, a veteran senator, independent Democrat and Iraq war hawk, and Tom Ridge, a former governor of Pennsylvania (a swing state with 21 Electoral College votes) and the first secretary of homeland security. Mr McCain reluctantly rejected both men because their pro-choice views are anathema to the Christian right.

The Palin appointment is yet more proof of the way that abortion still distorts American politics. This is as true on the left as on the right. But the Republicans seem to have gone furthest in subordinating considerations of competence and merit to pro-life purity. One of the biggest problems with the Bush administration is that it appointed so many incompetents because they were sound on *Roe v Wade*. Mrs Palin's elevation suggests that, far from breaking with Mr Bush, Mr McCain is repeating his mistakes.

Canada

An early appointment with electoral destiny

Sep 4th 2008 | OTTAWA
From The Economist print edition

Stephen Harper decides that patience should not be the Conservatives' virtue

AP



"A PRINCE never lacks legitimate reasons to break his promise." Stephen Harper, Canada's Conservative prime minister, is poised to test this bit of Machiavellian political theory. Having championed legislation last year to fix election dates at four-year intervals, thus curtailing the ability of future governments to call a vote when victory seemed most assured, Mr Harper is now about to ignore his own law and announce a general election within days. With no overarching issue preoccupying voters still awakening from their summer slumber and with four by-elections set for September, which a general election would pre-empt, Mr Harper presumably has strong reasons for wanting to face the electorate a year before the set date of October 19th 2009. But what are they?

Probably not the one that the prime minister tested on the media at a press conference in late August: that the Liberals, Bloc Québécois and New Democratic Party, who collectively hold 173 of the 308 seats in the House of Commons, are intent on opposing the government and blocking its agenda. It can hardly come as a surprise to Mr Harper, who has led a minority government since the January 2006 election, that opposition parties believe their job in a parliamentary system is to challenge the government. Nor does his claim of blockage stand much scrutiny. The Conservatives have managed to get 70 government bills, including three budgets and two economic statements, through parliament and have survived more than 40 votes of confidence.

What is more likely is that the prime minister saw so many storm clouds on the horizon—a weakening economy, mounting Canadian casualties in Afghanistan, the question of how to deal with a new administration in America and the threat that several scandals may come to a head—that going now became more appealing than being caught in a deluge later. He has dared and double-dared the opposition to force an election and so do the job for him, to no avail. "Fish or cut bait!" he commanded Stéphane Dion, leader of the Liberal Party, earlier this summer. Mr Dion said later that he did indeed go fishing on holiday.

The nightmare scenario for the Conservatives is that the economy, dragged down by slow growth south of the border (Canada's most important export market) and by the impact of a strong Canadian dollar, will deteriorate to the point that the federal government will post a budget deficit after more than a

decade of surpluses. Economic growth for the first six months of 2008 was almost imperceptible, lower than projections made in the February budget. Having spent the double-digit surpluses of previous years on such things as tax cuts, defence procurement and debt repayment, the Conservatives have little fiscal leeway.

The American election on November 4th could also sway Canadian voters, whose proximity to the United States means they are exposed to much of its media coverage. Should a wind of change sweep Barack Obama into office, it might also provide a handy tailwind for the left-of-centre Liberal party to America's north. Regardless of which candidate wins in America, their focus on the environment spells bad news for Mr Harper, whose government has struggled to come up with a green plan that does not antagonise voters in the energy-rich western province of Alberta, which the prime minister calls home. A Liberal promise to institute what Mr Dion says will be a revenue-neutral carbon tax has burnished his leadership credentials while accentuating the difference on environmental issues between the two main parties.

Other looming troubles may appear less significant, but any of them could flare up given the right mix of circumstances. The Conservatives are currently in court challenging a ruling by the commissioner of elections that they broke financing rules in 2006. Also, a long-promised public inquiry into the business dealings of Brian Mulroney, a former Conservative prime minister and Harper adviser, will start hearings early next year. And the casualty list from Afghanistan, a war that Mr Harper has strongly backed despite its unpopularity among Canadians, continues to grow, reaching 96 soldiers, including three killed on September 3rd.

Not all of the unspoken reasons for seeking an election sooner rather than later are negative. The Conservatives say they can fight the campaign, which must run a minimum of 36 days, without borrowing money. Not so the Liberals, with Mr Dion still repaying debts from his December 2006 leadership campaign. Moreover, the Conservatives may benefit from a swing in their direction in voter-rich Quebec.

Mr Harper gets more points for personal leadership in opinion polls than his Liberal counterpart and one new opinion poll puts the Conservatives at 37% and the Liberals at 29%, virtually unchanged since January 2006. So why call an election at all, if nothing will change? Canadians may not have warmed to his party, but Mr Harper still privately hopes for a majority and at least one pollster reckons a majority is within his reach, if not in his grasp. Machiavelli would surely have thought that good enough reason for an early election.

Mexico

Oh rose, thou art sick

Sep 4th 2008 | MEXICO CITY
From The Economist print edition

The president faces a long goodbye

AP



IT IS a sign of the diminishing power of Mexico's presidency that the president no longer delivers his annual state of the union address to Congress in person. When Felipe Calderón appeared before Congress last year, a riot broke out. This year, when a change in the law meant he did not have to appear before Congress, he had planned instead on delivering an address to the public from Mexico City's central square. In the event, this was cancelled: Mr Calderón had a bicycle accident over the weekend, breaking a bone in his shoulder and hurting his knee. The president was reduced to issuing his address on September 1st in written form.

Mr Calderón once enjoyed better fortunes. He won election in July 2006 with a margin of just over half a per cent; Andrés Manuel López Obrador, of the centre-left Party of the Democratic Revolution (PRD), narrowly lost and ended up protesting for months in the street. He still has not conceded. Nonetheless, Mr Calderón took office in December 2006 with his National Action Party (PAN) for the first time holding the largest share of seats in both houses of Congress. The new president quickly deployed the army in the fight against drug-trafficking gangs, a move that shifted focus from the disputed election. He then succeeded in pushing a reform of the state pension system and of the government's finances through Congress with the help of Mexico's third major party, the Institutional Revolution Party (PRI), which had refused to co-operate with his predecessor and party colleague, Vicente Fox.

Though Mr Calderón, a career politician, proved more able to reach consensus with Congress, all three political parties suffer from partisan in-fighting: Mr Calderón's PAN between its conservative Catholic and more pragmatic business-friendly elements; the PRI between nationalist and modernising elements; and, most notably, the PRD between those who would grudgingly acknowledge Mr Calderón's right to the presidency and those who continue to insist that Mr López Obrador is the legitimate president of Mexico.

But Mr Calderón's manoeuvring appears to have failed when it comes to the higher stakes of energy. His ambition is to reform the state oil company, Pemex, which accounts for nearly 40% of government revenue, and which in the first seven months of this year sent 83.5% of its revenues to the public coffers. That means that Pemex is being starved of the money needed for exploration and refining.

Unhappily, reform looks unlikely. Mr López Obrador has trapped Mr Calderón into months of debate about the nature of any energy reform. Any measure that might be passed in Congress's new session will be a tepid compromise, leaving the influence of Pemex's union intact, and limiting the private investment needed if Mexico is to achieve self-sufficiency in refining and replace its reserves.

Energy reform is hardly the president's only problem. His first big gamble, deploying the army to confront drug-trafficking gangs, is also looking shakier. Mr Calderón was at first widely lauded for his get-tough approach. However, the outcome has been more violence, with headless bodies appearing almost daily. The saving grace for Mr Calderón has been that the drug-related violence has been particularly focused on gang members and law-enforcement officials—very few innocent bystanders have been killed. Not so with kidnapping, which is largely carried out by specialised gangs operating independently from those involved in the drug trade.

According to the federal government, kidnapping rose 9.1% year-on-year in the first five months of 2008. The kidnapping and subsequent murder this summer of the son of a prominent businessman caused public opinion to turn. On August 21st, Mr Calderón, congressional leaders, all of Mexico's state governors and a bevy of others signed a "National Agreement for Security". But one security expert says this amounts only to "penal populism", and Guillermo Zepeda, who studies the Mexican justice system,

notes that the agreement will do nothing to change the fact that the average tenure of a Mexican policeman in urban areas is less than two years and three months. In an echo of protests in 2004, civil-society groups organised marches around the country on August 31st in protest against insecurity and the impunity of criminals, with perhaps 150,000 turning out in Mexico City. This, though, was less than half the 2004 figure.

Even though Mr Calderón's overall approval rating hovers above 60%, according to an August poll by *Reforma*, a Mexico City newspaper, his ratings on specific areas drop sharply: only 34% for public security, 31% for jobs and 25% for efforts to combat kidnapping. The result is that the president and his party go into next year's mid-term elections in a weakened state. As with Mr Fox before him, Mr Calderón's bright start may be followed by a prolonged, awkward goodbye.

Argentina

Satisfying the creditors

Sep 4th 2008 | BUENOS AIRES
From The Economist print edition

The president pays her dues

EVER since Cristina Fernández de Kirchner replaced her husband, Néstor Kirchner, as Argentina's president last December, the country's economy has been on the skids. Growth has slowed from over 8% a year to an estimated 5-6%; inflation has approached 25%; some $11 billion of capital has departed; and interest rates on government bonds have increased by a third. Although Ms Fernández did not create most of these problems—Mr Kirchner left her a rapidly overheating economy after four years of populist growth-at-all-costs policies—she has paid the political price for them, with approval ratings below 30%.

EPA



Cristina changes course

After months of an approach which might be called steady as she goes down the drain, Ms Fernández has finally taken a step towards straightening out Argentina's economy. In a surprise announcement on September 2nd, she promised to repay the $6.7 billion that the government owes the Paris Club group of 19 sovereign creditors, most of which had been in default since the country's financial crisis in 2001-02. The measure, long recommended by private economists, should help boost foreign investment. But by itself, it will not be sufficient to restore the markets' confidence in her government.

Argentina's overdue loans from the Paris Club nations, principally Japan and Germany, have represented a serious obstacle to its medium-term growth potential. While the country was in arrears, the export-promotion agencies of many foreign governments were banned from providing subsidised credit for sales or investments in Argentina. Now, it will be eligible for such loans, substantially lowering financing and insurance costs for infrastructure projects and imports of capital goods. In particular, the move should expedite the construction of a high-speed rail line linking the country's three largest cities, a costly project of questionable necessity strongly backed by Ms Fernández. "We haven't been getting big investments of hundreds of millions of dollars because they need international financing," says Beatriz Nofal, the president of the government's investment-promotion agency. "Now they'll start coming."

But the mechanism Ms Fernández has chosen for repaying the debts is reinforcing widely held concerns about Argentina's economic management. Just as her husband did when repaying the government's debt with the IMF in 2005, Ms Fernández has rustled up the cash by helping herself to 15% of the central bank's foreign-currency reserves. In addition to highlighting the bank's tenuous independence, this decision implies a steep opportunity cost: Argentina could easily have paid the debt in instalments rather than in one lump sum. Doing so might have spared the country the need to borrow ever-greater sums from the Venezuelan government, which now charges a daunting 15% interest rate.

But according to the Paris Club's rules, securing any such restructuring with the group would require the blessing of the IMF, which has long been the Kirchners' favourite political scapegoat. And in turn, to obtain the Fund's approval, Argentina would probably have had to reveal how it calculates its official

inflation figure, which is manipulated so that it hovers at around a third of the true rate. Ms Fernández remains unwilling to reveal precisely how her officials doctor Argentina's economic statistics.

If Ms Fernández hoped that her decision would calm investors' nerves, she appears to have been mistaken: the spread between the interest rates on Argentina's bonds and US Treasury notes actually increased on the day she made the announcement. The markets remain jittery because Argentina's unpaid obligations to the Paris Club were in fact among the least of its worries. The government still refuses to negotiate with the private holders of $20 billion of its bonds who held out against the country's harsh debt restructuring in 2005, a decision that prevents it from borrowing on the international capital markets. It continues to impose strict price controls and hand out lavish energy and transport subsidies. And it suffers from a yawning credibility gap, due to lies about the inflation rate.

Virtually all analysts concur that settling up with the Paris Club was a long-overdue move. But if Ms Fernández is serious about avoiding the stagflationary trap that looms in Argentina's future, she will need to take far bolder steps.

Wiretaps in Brazil

Spying on justice

Sep 4th 2008 | SÃO PAULO
From The Economist print edition

The top spooks eavesdropped on the top court

VIEWED from any angle, the revelation that Abin, Brazil's intelligence agency, recorded a conversation between Gilmar Mendes, president of the Supreme Court, and Demóstenes Torres, a senator, is ugly. Either someone told the agency to bug the highest judge in the land, or the senator's phone was bugged—or an agent was freelancing. Any of these scenarios would be bad enough. But according to the source who handed the transcript to *Veja* magazine, the agency has also bugged the offices of the president and his chief of staff, as well as numerous congressmen.

In response to the news, President Luiz Inácio Lula da Silva on September 1st ordered an inquiry and temporarily suspended Paulo Lacerda, the country's chief spook, and senior officials in his agency. Mr Lacerda denies that his men bugged Mr Mendes. He has Lula's backing, for the moment. In the meantime, all three branches of government—legislative, executive and judicial—are wondering whether they really were spied on, by whom and for what purpose.

The topic of the conversation between the two men, which took place on July 15th and lasted just a few minutes, was not top secret: Mr Torres called Mr Mendes to discuss an inquiry into paedophilia. That a legislator might call up a senior judge for a chat seems odd, as does the conversation's tone, which was all first names and laughter. Mr Torres even signed off with an *abraço* (a hug).

Eavesdropping incidents are not new. A decade ago a presidential conversation was caught when the office of the national development bank was bugged while the Telebrás phone company was being privatised, presumably so that a bidder could gain an advantage over rivals. Other incidents have occurred since, suggesting that Abin agents and phone-company employees can all too easily be bribed. The result, according to one political consultant, is that "the telephone in Brazil has become like Google: once you say hello, information is there for everyone to see and hear."

Thailand

Samak pulls the emergency cord

Sep 4th 2008 | BANGKOK
From The Economist print edition

Reuters



The government tries to stand firm against an ever more ruthless street opposition

THAILAND'S foreign minister, Tej Bunnag, has been trying to reassure the world that the chaotic scenes it has been seeing on its television screens from Bangkok are just "part of Thailand's political evolution and the democratic process". This Panglossian view became harder to sustain after violent clashes between government supporters and opponents on September 2nd, which prompted Samak Sundaravej, the prime minister, to declare a state of emergency in the capital. One pro-government demonstrator died and dozens from both sides were hurt. Mr Tej himself has resigned. The reasons are unclear, but it hardly helps the stability of Mr Samak's government, especially since Mr Tej advises the revered monarchy.

The army now has the power to remove by force the thousands of members of the anti-government People's Alliance for Democracy (PAD) occupying Mr Samak's offices and demanding his resignation. But the army chief, General Anupong Paochinda, has insisted force will not be used. The protesters have a variety of weapons and have been whipped up by the PAD's megalomaniac leaders. They claim to be saving the monarchy from Thaksin Shinawatra, the prime minister deposed in the 2006 military coup, whose supporters won last December's election.

It is now three years since Sondhi Limthongkul, a businessman and former pal of Mr Thaksin's, fell out with him and founded the PAD. The conflict has ebbed and flowed but this week took a turn for the worse. It had hitherto essentially been contained in a few blocks in Bangkok's old town. But the PAD has begun blocking airports and calling for nationwide strikes by transport and public-utility workers.

A strike called for September 3rd was generally ignored by workers. The PAD's excessive tactics, and its calls for the replacement of democracy with a mostly unelected parliament, have lost it much support among the urban middle-classes. Its support base may only be tens of thousands in a country of 64m people—but, unchecked, that is enough to wreak havoc.

The security forces' reluctance to apply the law may reflect a sensible refusal to risk bloodshed. In the past they have been accused of excessive violence, such as in suppressing pro-democracy demonstrations in 1992, so they fear a public backlash. However, there may be murkier reasons for the restraint. Among

the PAD's backers are some hardline army generals and, it is rumoured in hushed tones, influential figures close to the royal palace. Some PAD demonstrators are liberals protesting at the abuses of power under Mr Thaksin and Mr Samak. Some believe they have the palace's tacit backing.

Throwing fuel on the flames, the Election Commission announced this week it was asking the courts to dissolve Mr Samak's People's Power Party (PPP) for alleged fraud in December's election. The PPP became the vehicle for Mr Thaksin's allies after the courts dissolved his original party last year. The PPP won by far the most seats in the election, since when it has governed in a six-party coalition. To PAD stalwarts the commission's ruling shows they are right to try to bring down a corrupt government. To the government camp it looks like another sign that Bangkok's traditional, royalist elite is frustrating the people's will, to protect its privileges.

Various ways out of the conflict are being mooted. One, discussed by Mr Samak's cabinet this week, is a referendum on whether the public supports the government or the PAD. Another is a fresh election. But either would, most likely, be won by the Thaksinites and be ignored by the PAD, which has little regard for popular votes. A "government of national unity" is being bandied about: this would unfairly reward the opportunistic Democrats, the parliamentary opposition party, whose links with the undemocratic PAD have become ever more obvious. Mr Sondhi hinted in a newspaper interview that if Mr Samak stepped down he might accept another PPP figure as prime minister.

So far, most of Bangkok has gone about its business as normal. After the 2006 coup, some foreign visitors saw the tanks on the streets as another tourist attraction. This time, with public transport and utilities targets of the protesters, the economic risks may be greater (tourism accounts for 6.5% of Thailand's GDP). As the world economy wobbles, prolonged conflict is the last thing Thailand needs.



WORLD
ASIA

Japan's politics

Aso braced; Fukuda into the sunset

Sep 4th 2008 | TOKYO
From The Economist print edition

For the country, the start of an awfully big adventure

Illustration by Peter Schrank



AS YASUO FUKUDA walked from the stage this week, his colleagues angrily recalled why they had propelled him into the country's top job in the first place. It was to avoid a repeat of their humiliation last autumn at the hands of his younger predecessor, Shinzo Abe, who had shuffled his cabinet in the face of low popularity ratings, opened a special session of the Diet (parliament), and then abruptly resigned after a year in office. In an echo of that disaster, Mr Fukuda, with abysmal ratings of his own, also shuffled his cabinet, in early August. He had laid out his legislative agenda for an autumn special session. And then, on September 1st, he announced his resignation. If, as expected, he steps down on September 24th, he will have served almost exactly as long as Mr Abe.

For a man who agonised over choices, it was the most abrupt decision of the 72-year-old's political career (he did not even tell his wife). Mr Fukuda said he did not want to create a "political vacuum", and at least he moved before the special session had begun. Still, his shocked colleagues are bitter. The public's disdain for the ruling Liberal Democratic Party (LDP) is presumably now deeper. Meanwhile, the opposition camp is electrified, sensing a chance to end the half-century-long LDP shogunate.

History may be kinder than his colleagues are to Mr Fukuda, who had a nearly impossible job as prime minister in a hung parliament—the Democratic Party of Japan (DPJ) has controlled the upper house since July 2007. Even more thankless, he led a party whose disagreements had broken out into the open after a charismatic reformer, Junichiro Koizumi, was succeeded by the disastrous Mr Abe.

In his pronouncements, Mr Fukuda showed a keen sense of how Japan needed to tackle the burdens of an ageing population and mountainous national debt. He challenged his party's own pork-barrel interests, particularly the road-construction lobby, which not even Mr Koizumi defeated. In foreign matters he kept relations with America from fraying, by using the ruling coalition's supermajority to ram through legislation allowing Japan's navy to refuel ships in the Indian Ocean in support of efforts in Afghanistan. And he deepened Mr Abe's initiatives to warm Japan's ties with neighbouring China and South Korea. But there was no denying it: Mr Fukuda's leadership lacked even a smidgen of colour; the one thing he was not, as he admitted this week, was popular.

Had the cabinet shuffle offered a lasting bounce in the polls, Mr Fukuda might have struggled on for longer. Yet Koizumi-style reformists such as Hidenao Nakagawa were excluded from the new cabinet. Meanwhile Kaoru Yosano, the new economy minister, who has a clear sense of what needs to be done to overhaul the country's finances, was ordered to cobble together a fiscal-stimulus package in response to panicky and somewhat overblown fears that the economy, after six years of growth, was heading for a deep recession again (see article).

Much of the pressure for the stimulus came from the LDP's coalition partner, New Komeito, a Buddhist-linked party. It has had little influence in government affairs, but with the LDP in disarray it is making its

presence felt. Many New Komeito members are pacifists, and it pressed the government to shorten the coming Diet session, meaning it would not have time to use its supermajority to renew the Indian Ocean mission. More than anything, this may have tipped Mr Fukuda into resigning.

The man who negotiated with New Komeito over the truncation of the Diet session and, unwittingly or not, thus helped undermine Mr Fukuda, was Taro Aso, the LDP's secretary-general. After a strong showing behind Mr Fukuda in the last leadership election, he is now the clear favourite to take over as party president and prime minister after the LDP votes on September 22nd. Mr Aso, a 67-year-old Catholic, is from a prosperous right-wing family. He was foreign minister under both Mr Koizumi and Mr Abe. A hawk who wants Japan to play a much more robust role abroad, Mr Aso is also an original compared with more ideological conservatives. For instance, he advocates taking the sting out of the militarist Yasukuni shrine, which bedevils Japan's relations with its neighbours, by moving worship of Japan's war dead to somewhere less contentious.

Asonomics

On domestic matters, he favours a stimulus package, but opposes a return to the LDP's big-spending ways. Other than that, he seems rather unsure of his own core economic convictions. That is a potential weakness. Another is a reckless tendency for loose talk. For now, that may matter less than that Mr Aso is congenial, popular with the LDP's grassroots and the public. An unabashed fan of *manga* comics, the shares of whose publishers soared this week, he loves to press the flesh. Above all, he lacks the morose frown and sagging chops of both Mr Fukuda and Mr Abe.

Mr Aso will face a challenge from Yuriko Koike, a former defence minister, who will try to rally disaffected Koizumi followers behind her. But winning the party's nomination will be the easy part. Yukio Hatoyama, the DPJ's secretary-general, promises "all-out war", expecting to bring down the government by year-end. He says the DPJ will oppose the stimulus package, which he describes as "half-baked", favouring the LDP's traditional interests over the elderly and the weak. By opposing the Indian Ocean operation, Mr Hatoyama says the DPJ can help split the ruling coalition. He mentions coyly that New Komeito has recently been eager to talk to the DPJ.

The new prime minister need not call a general election until next September, and some LDP elders will advise Mr Aso to hang on for as long as possible. But New Komeito favours an early general election, while the LDP's prospects might never look better than with an immediate Aso bounce in the polls. Nobuteru Ishihara, an ambitious youngster who is considering a quixotic tilt at the LDP presidency, thinks that Mr Aso will introduce a fresh cabinet to the country and call a snap election.

With an election, the uncertainties only multiply. The ruling coalition has no chance of keeping its supermajority, but might with luck win a simple majority, or plurality. But the headache of a hung Diet would remain. Victory also brings problems for the DPJ, since it counts on the support of small left-wing parties for its control of the upper house. These parties would certainly cause trouble if the DPJ decides to ditch unrealistic electoral promises in favour of sensible government. Therefore, says Isamu Ueda of New Komeito, all the scenarios point to a wholesale political realignment after the next election. Japan's politics has just set out on its biggest adventure in over 50 years.

New Zealand

Money-muddles

Sep 4th 2008
From The Economist print edition

Another setback for the Labour-led coalition as an election looms

WITH an election due by mid-November, and her Labour Party trailing the centre-right National Party in the polls, the last thing Helen Clark, New Zealand's prime minister, needed was a scandal. But on August 29th she had to accept the temporary resignation of Winston Peters, the foreign minister, and leader of her coalition partner, New Zealand First (NZF), while accusations against him are investigated.

The scandal hinges on donations to NZF that allegedly were not properly declared or were used for other purposes, including Mr Peters's legal bills. Most attention focuses on an anonymous donation in 2006 of NZ$100,000 ($70,000) made by Owen Glenn, an expatriate businessman. Mr Peters, famous for railing against big-business influence on politics, long angrily denied wrongdoing or receiving money from Mr Glenn. Miss Clark has consistently accepted his word. But in July Mr Peters had to admit that the money, unbeknown to him, had indeed come from Mr Glenn. Then, on August 28th, Miss Clark admitted that she had spoken to Mr Glenn about the money in February.

AP



Expounding the Peters principle

The affair highlights the trickiness of New Zealand's mixed-member-proportional (MMP) political system. After the 2005 election, centre-left Labour was forced to seek NZF support to form a government. The two are not natural partners. NZF takes a tough stance on crime, and opposes immigration and any "special" treatment for indigenous Maoris. Mr Peters, a Maori himself, and once a minister in a National Party government, is credited with having done a decent job as foreign minister. But Miss Clark has been unable to keep him in line, as she typically has errant Labour ministers. Yet she has been tainted by association.

Mr Peters, a cunning maverick, has managed comebacks before. But the affair has hurt Labour. Miss Clark looks weak for not having sacked Mr Peters sooner. The National Party has the high ground: John Key, its leader since 2006, has declared that it will not form a government with Mr Peters. Mr Key, a 47-year-old former banker, had suffered from a lack of political experience and an image as a city slicker. Now he has managed to look principled.

But ruling out potential coalition partners is risky. No party has won an absolute majority since MMP was adopted in 1996. Despite National's lead in the polls, smaller parties—such as the Maori Party, the Greens and NZF—may well still have a role, and Miss Clark, who has led three governments since 1999, has proved an adept coalition builder.

National is also gaffe-prone. Before the Peters row took the limelight, it had been embarrassed by covert recordings of loose-talking party bigwigs suggesting that they did not feel bound by promises not to sell state assets if elected. And this week Mr Key was ridiculed for grandly comparing himself to Barack Obama. The election is National's to lose, but it might just manage it.

Monsoon floods in India

Bihar's annual sorrow

Sep 4th 2008 | DELHI
From The Economist print edition

With some justice, the government gets the blame for a natural disaster

EPA



Looking for dry land

AS NEW ORLEANS survived the worst Hurricane Gustav could throw at it, the scale of devastation wrought by another natural fury was becoming horribly apparent. On August 18th the monsoon-swollen river Kosi, a Ganges tributary that flows from Nepal to India, burst an embankment on the Nepali side of the border and flowed into a channel it had abandoned a century earlier. The water gushed into hundreds of villages in the Indian state of Bihar, killing an unknown number and displacing more than 3m, many of whom have been marooned on roofs, trees and tiny islands of dry land. Hundreds of thousands are living in makeshift camps.

South Asia's monsoon rains kill hundreds every year. This summer they have been especially severe, killing nearly 2,000 people in India since June, according to government's National Disaster Management Division. That total will soon double, at least. Many of the deaths occurred in the north Indian state of Uttar Pradesh. In north-eastern Assam, floodwaters have submerged over a thousand villages and imperilled the state's rare one-horned rhinoceroses, which have fled a national park for higher ground, putting them within easier reach of poachers. In Bangladesh, flooding has cut off at least 50,000 people.



But the effects of the monsoon in wretchedly poor and overcrowded Bihar have been especially grim. The Kosi floods the plains here so often it has become known as the "sorrow of Bihar". Even so, the river's diversion meant it hit villages rarely affected by flooding and unprepared to deal with it. Television showed despairing farmers herding their starving cattle into the river to die and men throwing punches as they tried to board tightly packed rescue boats. Food stores have been ransacked as people have fed their children grass. Bihar's chief minister, Nitish Kumar, has described the situation as "not a normal flood, but a catastrophe".

As is inevitable in India, local authorities have been blamed for failing to get help to victims fast enough; a shortage of boats has held back efforts to evacuate those stranded by submerged roads and railway lines. But aid agencies say the central government has been quick to act, pledging $228m to the relief effort and sending 3,000 soldiers into the area.

Probably more pertinent are the criticisms levelled at India and Nepal for failing to manage the river's famously erratic flow, a responsibility they share. Environmentalists say silt should have been cleared from the river bed months ago and that too many high embankments have caused undue pressure during the monsoon months. The worst negligence may have occurred more recently than that: local engineers claim that faxes they sent warning of imminent calamity were ignored in Bihar's capital, Patna, because the relevant bureaucrat was on leave.

Sri Lanka's war

Closing in on the Tigers' lair

Sep 4th 2008 | COLOMBO
From The Economist print edition

The army nears its aim of destroying the Tigers as a conventional force



Get article background

THE 25-year old war between the Sri Lankan army and the rebel Liberation Tigers of Tamil Eelam has entered what the government calls a “decisive and impressive” phase in its “war for peace”. On September 2nd the government reported it had overrun an important Tiger bastion, Mallavi, killing dozens of rebels and bringing the army one step closer to their headquarters at Kilinochchi, seat of their brutal leader, Velupillai Prabhakaran. Claims of imminent victory have come and gone in the war against the Tigers, who are fighting for an independent homeland in the north and east of the Sinhala-majority country for the Tamil minority. But this latest offensive has unprecedented momentum.

The Tigers are responding. Hundreds of miles from the front lines, security in the capital, Colombo, is intense. Under pressure, the Tigers habitually resort to terror tactics. On August 30th a package exploded in a crowded market in central Colombo, wounding 45 people. The attack was blamed on the Tigers. In another defiant gesture, they had on August 27th used their primitive jerry-built air force to attack the Sri Lankan navy at Trincomalee.

Since January, when it scrapped a tattered Norway-brokered ceasefire and vowed to crush the Tigers by the end of the year, the government has poured $1.5 billion dollars into an all-out offensive. It claims to have killed more than 6,300 rebels and, according to a spokesman quoted in the press, reduced their last stronghold in the Wanni region by nearly three-quarters. Draconian media restrictions make the claims impossible to verify.

In the process, some 145,000 northern Tamils have been displaced by daily gun battles and shelling between two sides with poor human-rights records. The United Nations says this figure could climb above 200,000 in the violent weeks ahead. Human-rights groups say the Tigers are forcibly recruiting women and children to fill depleted ranks, as well as moving families to serve as human shields against the military onslaught. President Mahinda Rajapakse is not deterred. He has said his forces will not turn back “until every inch of land is recaptured and each and every terrorist is killed or captured.”

A stalemate held until June, when forces finally punched through rebel lines to seize the strategic Mannar peninsula. On July 16th an important naval base was overrun, followed by four more bases. The army now has to seal the north-west coast to cut a vital Tiger weapons supply-line from southern India, and simultaneously drive up the eastern flank, which has put up stiff resistance. The army says advance units are now within artillery range of Kilinochchi, where Mr Prabhakaran is believed to be hiding in an

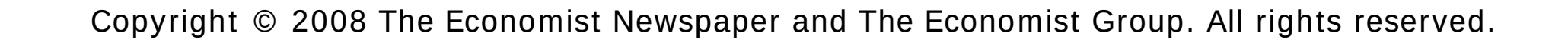
underground complex. The last of the Tigers' elite cadres are believed to have dug in for a final showdown. A fierce fight is expected.

The Tigers are under financial as well as military pressure. Their once ample war chest has shrunk. At their peak they are estimated to have raised as much as $300m a year, nine-tenths of it abroad. But a worldwide crackdown on their fund-raising operations and weapons procurement has hurt. Millions of dollars in assets have been seized or frozen. Meanwhile, joint India-Sri Lanka naval patrols of the Palk Strait between the two countries has reduced the inflow of desperately needed arms, provisions and materiel.

Sri Lanka's soldiers hope to crush the Tigers as a standing force by the end of this year. However, some observers note the current offensive has yet to encounter the full might of the rebels, who have in the past ceded territory as bait to draw in government troops. The rebels still have hundreds of hardened fighters. There is even talk of chemical weapons.

Even if the Tigers are soon broken as a conventional fighting force, they might regroup in remote northern jungles to wage a protracted guerrilla war. This would mean a greater reliance on terrorism to "bomb themselves back onto the agenda", according to Paikiasothy Saravanamuttu, director of the Centre for Policy Alternatives, a think-tank in Colombo. The market bombing could be a sign of worse to come.

President Rajapakse's war up north may soon be won, and a flag planted in Kilinochchi. But an end to the broader conflict will be elusive until his government tackles the economic, cultural and political grudges that have long fuelled Tamil nationalism. And the victory march is itself creating new resentments—in the traumas endured by thousands of Tamils now trapped in the northern war zone.




WORLD
ASIA

Xinjiang

Chinastan

Sep 4th 2008 | KASHGAR AND KUQA
From The Economist print edition

A crackdown in China's wild West, its Muslim-majority chunk of Central Asia



ON THE roads crossing the dusty fields of cotton and maize around the oasis city of Kashgar, China's police are on alert. Terrorists, as they call them, have been stepping up their attacks. Officers at checkpoints turn back foreigners venturing towards troublespots. Citizens entering Kashgar line up by the roadside to have their identity cards scanned.

Kashgar's recent troubles began on August 4th when the police said a lorry was driven into a group of border guards jogging in the heart of the city. Home-made explosives were detonated and the police were attacked with knives. Sixteen policemen were killed, bang in front of a posh hotel. Just ahead of the opening of the Beijing Olympics, the incident unnerved the government. It blamed two "terrorists", arrested on the spot. That is its usual term for Muslim militants pushing for the independence of Xinjiang, a vast Central Asian expanse of mountain and desert.

Despite an intensified campaign against potential troublemakers, violence has continued. On August 10th, with the games under way in Beijing, 2,800km (1,750 miles) to the east, assailants threw home-made bombs at a police station in the town of Kuqa during the night, killing a guard. Again, they were Uighurs, members of the mostly Muslim, Turkic ethnic group estimated to make up nearly half Xinjiang's 20m population. They let off several more bombs in Kuqa's broad, deserted shopping streets, killing a Uighur civilian.

A dangerous neighbourhood

There have since been at least two more attacks in the countryside around Kashgar. On August 12th three guards were killed at a checkpoint in Yamanya township. Two policemen were killed on August 27th in nearby Jiashi county. The official media called the attacks "terrorism". It is the bloodiest series of such incidents in Xinjiang since the 1990s.

China likes to link Xinjiang's troubles to the militant Islamism roiling other countries in the region. On August 28th, at a summit in Tajikistan, President Hu Jintao told fellow leaders of the Shanghai Co-operation Organisation, which groups China, Russia and four Central Asian countries, that members should "deepen co-operation" in their fight against the "three evil forces" of terrorism, separatism and religious extremism.

The police in Xinjiang have not pinned the blame for the recent violence on any terrorist group, nor has any claimed responsibility. But the official press has been less restrained. *Nanfeng Chuang*, a weekly magazine, said unspecified pro-independence groups outside China were “imitating al-Qaeda” and sending members into Xinjiang to organise terrorist attacks.

The group most commonly accused of waging a terror campaign in Xinjiang is the East Turkestan Islamic Movement (ETIM), which in 2001 China described as a “major component” of Osama bin Laden’s network. Earlier this year officials said ETIM had been plotting attacks against the Olympics. A group calling itself the Turkestan Islamic Party (possibly another name for ETIM) released videos claiming responsibility for bus explosions in Shanghai in May and the south-western city of Kunming in July. But the authorities, partly perhaps to prevent fears of a spread of violence into the rest of China, denied the blasts had any terrorist connection.

In fact scant evidence has been made public of any organised terror campaign in Xinjiang or anywhere else in China. The recent attacks involved only the crudest weapons—no machine-guns or other military arms in a part of the world awash with them. In Kuqa a Chinese man shows how an explosive device had fallen to the bottom of the flight of stairs down to his shoe shop. He says the confined space concentrated the blast and enabled it to smash metal and glass shutters.

None of the attacks seems to have been aimed primarily at civilians. One did die in Kuqa, but the decision to attack at 2am does not suggest an intention to cause widespread loss of life among ordinary citizens. The killing of the border guards in central Kashgar occurred at around 8am, also a quiet time, since most people follow an unofficial local time two hours behind the Beijing hour on the clocks.

There is not much evidence either of religious extremism. There have been no reliable reports in Xinjiang of suicide-bombings, a hallmark of Islamist fanaticism. In Kuqa two attackers are said to have blown themselves up, but whether by accident or design is not clear. Eight others were shot dead by police. Li Wei of the China Institutes of Contemporary International Relations in Beijing says he believes that Xinjiang’s militants are motivated more by separatism than *jihad*. In the 1930s and 1940s, a Republic of East Turkestan twice enjoyed a brief independence in parts of Xinjiang. In Kashgar a few older women go out with their heads completely veiled and most women, even many schoolgirls, wear headscarves. But many young people drink alcohol and dress as fashionably as do their Han Chinese counterparts.

So China may be overstating the menace a bit, to rally international support for its crackdown. Travellers in southern Xinjiang say they often see slogans on walls warning people to shun Hizb-ut-Tahrir, an extremist group banned in much of Central Asia that wants to unite Muslims around the world under one caliphate. Others remind citizens that making one’s own way to Mecca is “illegal”. China only allows government-run trips, partly to stop pilgrims mixing with extremists.

To discourage the others

China’s heavy-handed repression angers many Uighurs. In the build-up to the games and particularly since these latest incidents, residents of Kashgar and Kuqa say many suspected of militancy have been arrested. Helmeted police cruise the streets of Kuqa at night in open-topped jeeps. A driver in Kashgar erupts with a tirade against China’s leaders—as “fascists” who do nothing but “bully” Uighurs. Security is likely to remain tight at least until after October 1st, when officials are fearful of attacks over the National Day holiday.

On July 9th near Kashgar, apparently to cow anyone plotting to disrupt the Olympics, the authorities summoned residents to a rally. Officials read out death sentences imposed on three Uighurs for terrorist offences. Notices posted around Kashgar showed the three men’s faces covered by red crosses (indicating they had been executed) and gave details of 57 others sentenced for separatist or terrorist crimes.

The Economist found a relative of one of the 57 near Kashgar. The police soon stopped the interview and detained those involved for over three hours. One officer said he had not been home for more than two weeks because of the alert in the area. A Han Chinese, unusually for a rural policeman, he carries a pistol on his hip.

Kenya

When not imploding is not enough

Sep 4th 2008 | NAIROBI
From The Economist print edition

Six months after its bloody election crisis, the country is still struggling to recover

Reuters



IN THE past few weeks, Kenyans have been celebrating. They were delighted when their athletes came back from the Olympics in China with 14 medals, five of them gold, whereas South Africa, often the continent's sporting giant, got just one silver. A buoyant president, Mwai Kibaki, handed bonus cheques to the medallists on their return. And then Kenyans had the pleasure, early one morning on television, of watching Barack Obama, the son of a Kenyan civil servant, accept the Democratic nomination to be president of the United States.

But despite such good cheer it is evident that east Africa's leading country has yet to recover fully from the post-election violence that ravaged it earlier in the year, when some 1,700 people were killed and 300,000 displaced. Its fragile coalition government is struggling to take the necessary decisions to tackle the country's manifold problems. With Mr Kibaki as president and the opposition leader, Raila Odinga, as prime minister, the mere fact that their cumbrous joint administration has hung together is an achievement. But beyond that, six months into its existence, it has little else to celebrate.

Since the bloodshed of January and February, the economy's progress has been jerky. Take tourism, the country's biggest foreign-currency earner. "It's a wonderful, wonderful world," purred Mr Kibaki on a recent trip to the Masai Mara game reserve, as he looked out on a muddy swollen river with crossing wildebeest and snapping crocodiles. Yet the Kenya Tourism Board says the country lost $191m in revenue in the first half of the year, with visitors down 36% to 561,000 compared with the first six months of 2007. Safari firms say bookings are still sparse; they hope a government marketing campaign will give them a high-season Christmas boost and that the American State Department's recent lifting of its advice not to travel to Kenya will encourage more Americans to fly in.

Agriculture is struggling too. Poor rains, a tripling in the cost of fertiliser and pesticide, and land disputes linked to the election crisis have wrecked this year's maize harvest. The Kenya Cereal Growers' Association says production will slump from 34m bags of maize to 24m. To make up the shortfall, the government has had to import maize from South Africa at inflated prices. Exports of high-value vegetables and fruit to the European Union, on which entrepreneurial farmers have staked their future, have been hit by high fuel prices and a trend towards buying food more locally and seasonally.

Flower farms say that demand in Europe for Kenyan roses and other cut flowers is saturated; exports may dip slightly next year. Tea production lost ground to India and Sri Lanka during the crisis and has since been hit by pay demands and by the loss of some British "fair trade" licences. Only coffee, another

big export earner, was unaffected; brokers in Nairobi, the capital, say production and prices are steady.

The country’s stock exchange has weathered the storm, though recent trading has been flat. A public offering of 25% of the largest mobile-phone provider, Safaricom, boosted state coffers by $833m. Trade with China is still rising, and may top $1 billion this year. The African Development Bank reckons Kenya could grow by 7% this year and says a government target of 10% by 2010 is attainable. But the World Bank is less confident, pointing out that few economies, particularly ones like Kenya’s that are rural-based and lack fossil fuels, have achieved double-digit growth.

Whatever the growth rate, the prevailing mistrust between Mr Kibaki’s Party of National Unity (PNU) and Mr Odinga’s Orange Democratic Movement is denting investor confidence. The Oranges still believe Mr Kibaki stole the election. A comprehensive exit poll on election day, paid for in part by the American government, was recently released after being suppressed since the crisis. It suggests that Mr Odinga won 46% of the vote against 40% for Mr Kibaki, with a margin of error of 1.3%. Such findings are not definitive, and suggest the Oranges pilfered votes as well as the PNU, but they continue to undermine Mr Kibaki’s legitimacy as president.

Mr Odinga is credited by some with sharpening government performance by introducing contracts that are meant to make ministers and senior civil servants work harder. But despite Mr Odinga’s claims to enjoy a “warm, respectful friendship” with the president, the truth is that the two barely co-operate, leaving a vacuum of leadership at the top. Mr Odinga may have drawn some waverers onto his side, including some ministers previously loyal to Mr Kibaki. But his office is understaffed and his powers fettered. Mr Kibaki, for instance, still appoints top civil servants. A recent sympathetic visitor described Mr Odinga’s office as a “shell”.

The result is a palpable sense of drift. Any vestige of the previous government’s anti-corruption drive, for example, has been abandoned. This was made plain during a recent brief return visit by John Githongo, Kenya’s former anti-corruption chief, who had been forced to flee Kenya three years ago after blowing the whistle on ministers in the previous government. His movements were kept secret for fear he might be murdered; he met Mr Odinga but Mr Kibaki was disinclined to see him. Corruption remains “out of control”, says Mr Githongo, and is now not even a priority.

The drift cannot be allowed to extend to the big infrastructure projects that Kenya must complete if it is to start moving again. Several are pending: a cement factory at Athi River, south-east of Nairobi; a tarmac road of 530km (329 miles) to link Kenya to Ethiopia; a broadband internet connection via an undersea cable; a new terminal for Nairobi’s airport; the overhaul of Kenya’s port at Mombasa; and a plan to double energy production and slash prices by tapping the Rift Valley’s geothermal potential.

A divided government may not be able to push these through. With water and land, energy has become a make-or-break issue. The cost of electricity has risen 51% this year, with demand growing and climate change lowering the levels of hydroelectric dams. Kenya’s fractured, ethnically divided politics has failed to deliver much in such fields in the past. Yet no one seems enough in charge at the top to get things moving now.

Somalia

Hunger and terror

Sep 4th 2008 | NAIROBI
From The Economist print edition

There has been no pause in the country's relentless downward spiral

Get article background

IT HAS been a long, dreadful summer for Somalia. The UN says that 3.2m Somalis (out of about 8m) now need aid just to stay alive: a 77% rise on last year. A sixth of Somali infants are at risk of starving to death. Due to what aid organisations call "intolerable insecurity", almost all international charity workers have left. Offshore, Somali pirates are as bold as ever. They are holding around ten vessels, including three large tankers with 130 crewmen captured this week.

Foreign governments still wrangle over Africa's worst humanitarian and political crisis. UN people working for a deal between Islamist insurgents and the weak Somali government want 8,000 peacekeeping troops to replace the few thousand beleaguered African Union and Ethiopian soldiers. But more senior people in the UN's peacekeeping office, already failing to get enough troops into Darfur, rule that out. A multinational force would be the next best thing, but who would pay? Mooted Saudi cash has not materialised.

Optimists point out that Somalia's transitional government has at least not collapsed altogether. The prime minister, Nur Adde Hussein, survived a vote of no confidence from the parliament this week. The president, Abdullahi Yusuf, is apparently no longer standing in the way of national reconciliation. Ethiopia's prime minister, Meles Zenawi, whose forces invaded Somalia with American backing in 2006, has hinted he may withdraw them. Hardline Islamists of the Alliance for the Reliberation of Somalia (ARS) have joined with the more moderate Islamists of the Islamic Courts Union at peace negotiations in Djibouti. The rump of the ARS, led by the former Somali army colonel, Hassan Dahir Aweys, says it will sign a ceasefire only if the Ethiopians go.

Even then, the Islamic Courts' former military wing, known as the *Shabab* (meaning Youth), would fight on. Its men have been radicalised by the insurgency and have grown in confidence (or fatalism) since being classified as a terrorist group by the American administration. One of its commanders, Mukhtar Robow, wants to merge it with al-Qaeda. Together with local clan factions, the *Shabab* took control of the southern port of Kismayo on August 24th. A video released on jihadist websites shows Saleh Ali Nabhan, an al-Qaeda man believed to responsible for the bombing of the American embassy in Nairobi in 1998 and now sheltered by the *Shabab*, appealing for African Muslims to fight a holy war in Somalia. Foreign fighters are unlikely to sway a new battle for Mogadishu, the capital. But a flow of Somalis into al-Qaeda would be bad news for global counter-terrorists.

Israel

Come and have a good time

Sep 4th 2008 | TEL AVIV
From The Economist print edition

Israelis want foreigners to see their country in a new light

COUNTRIES, like items in the supermarket, sell better with clever advertising. So Israel, long frustrated by its image as a country tarnished by danger and strife, wants to rebrand itself—as hip, cool, cultured, fun and creative.

The initiative comes from Israeli diplomats and Jewish groups in America, whose research shows that even though Israel enjoys strong political support from Americans, its image is far too lean and mean. Asked to describe "Israel house", one focus group imagined it as arid, all-male and surrounded by barbed wire. The concepts that first spring to mind in polls are conflict, desert and religious extremism. "We want people to know other things about us," says a top Israeli involved in the scheme. "About our computer chips and health-care innovations."

In Europe, where political support for Israel is lower, an ambassador wondered whether a livelier sales pitch would help. American films flood the continent, he pointed out, but many Europeans still dislike America. "We told him, let's get to that first stage when people associate Israel with science and music and archaeology," says the official. "Then we'll take it from there."

The diplomats have managed to involve other government departments: no mean bureaucratic feat. The foreign minister, Tzipi Livni, bidding to become prime minister when Ehud Olmert steps down this month, has charmed a wad of cash out of the treasury. At her urging, Israel has hired a British company, Acanchi, to lead the branding effort. Expect a new slogan, a logo, perhaps even a jolly new cartoon character.

But branding, says Acanchi's sales blurb, must always be "rooted in the reality and essence of the place". Asked by researchers how they see themselves, Israelis have come up with three themes: ingenuity, passion and fusion—the melding of disparate communities and cultures. A main goal is to deflect attention from the Israeli-Palestinian conflict. "We don't want to ignore it but to contain it," says a brand-minded Israeli. "There are 800 foreign correspondents here, all focused on the conflict. We would like them to zoom out and look at other things too. Branding is about the real Israel." It may be a hard sell.

Ramadan

Time for tall tales on television

Sep 4th 2008 | CAIRO
From The Economist print edition

The Muslim month of fasting allows for ever-juicier television fare at night

IN RAMADAN's past, pious Muslims in the big cities of the Middle East waited, in the hush before sunset, for the sound of a cannon shot, followed by the cry of "Allahu Akbar!" from a nearby mosque, to break their day-long fast. Now, during the month-long fasting period, families tune instead to their televisions. As the broadcast call to prayer declares the start of another night of furious eating and alcohol-free drinking, so it heralds a visual feast.

Satellite television has taken off in the region like nowhere else. In wealthy Gulf states, some 95% of households own digital receivers; even in poorer countries, such as Jordan and Morocco, the satellite penetration rate now tops 75%. Not surprisingly, the number of free-to-air channels available on Arab satellites has grown sixfold in the past five years, to more than 300. Those willing to pay subscription fees or to have a clever technician break encoded blockers can tune in to dozens more.

The sated lassitude that overtakes fasters after their sunset meal, the long hours of darkness and the fact that many sleep during daytime to reduce the rigours of the fast combine to make the 30 days of Ramadan, which started this year on September 1st, prime viewing time. The month takes up as much as half the annual production budgets of some networks and generates a similar proportion of advertising revenue. Competition for airtime in the season has grown fiercer. With its 80-year-old cinema industry, skilled crews and big studios, Egypt has long dominated the airwaves. But upstart producers in Syria and Dubai, among other places, are catching up.

This year's diversity of Ramadan fare is more bewildering than ever. Armchair zappers can flick between some 25 fresh drama serials, a batch of new sitcoms, a score of religious Ramadan specials, celebrity chat-fests and reality shows, each with daily episodes stretching across the fasting month. The biggest, in terms of budget and audience, are the costume dramas. Current programmes are set in everything from 8th-century Baghdad, to rural Syria under French domination, Cairo in the 1940s, Bedouin camps in the Arabian desert and a modern, fictional oil-rich republic called Chripstan. Some tackle contemporary issues by way of allegory, featuring wicked sultans and malingering imperialists. Others, such as an Egyptian drama about a journalist whose search for her kidnapped boy unveils trafficking in child labour, and another about a crooked cabinet minister, address them head on.

This year competition to lure audiences is coming from another quarter. In a garish real-life drama, a billionaire Egyptian property mogul, Hisham Talaat Mustafa, has been charged with hiring a hit man to kill a willowy Lebanese starlet, Suzanne Tamim, who was found in July, in a posh flat in Dubai, with her throat slit. Police say the chief of security at a hotel owned by Mr Mustafa has confessed to taking $2m to kill her. A diverting tragedy, certainly. But the spotlight it casts on the region's rich and famous is small comfort to ordinary fasting citizens, who this Ramadan are scrimping to pay record prices for food as a burst of inflation sweeps the region.

The West Bank

The villagers hemmed in

Sep 4th 2008 | NILIN
From The Economist print edition

The Israelis' security barrier continues to threaten Palestinian livelihoods



THE tear gas has dispersed but the dirt road leading out of the village of Nilin is still strewn with rocks and broken bottles. Strips of carton and carpets, which served as makeshift prayer mats during the clashes that took place the day before, are still spread beneath the olive trees.

A Palestinian village of some 5,000 souls west of Ramallah, the Palestinian capital, Nilin is the West Bank's latest hot spot. Nearby, on Palestinian land, are two Israeli settlements, Modin Illit and Hashmonaim. For the past four months, the people of Nilin, aided by Israeli and foreign campaigners, have been protesting against the barrier the Israelis are planning to build across their land.

Once completed, it will deprive Nilin of a third of its farmland. In May the villagers set up a committee to stop the barrier. Extra organisers came from the neighbouring village of Bilin, which had already waged a successful campaign, persuading Israel's High Court to tell the army to change the route, to retain more land for the village.

But the battle over Nilin rages on. Every week, protesting villagers and campaigners from outside walk towards the confiscated land and shout at the Israelis. The demonstrations are usually peaceful, but occasionally a protester throws a stone. The Israeli soldiers respond with rubber-coated bullets and tear-gas. Two Palestinians, one a boy of 11, have been killed. This week a 40-year-old man was badly wounded. Two months ago, a video film taken by a Palestinian girl with a camera provided by B'Tselem, an Israeli human-rights group, showed an Israeli soldier shooting another Nilin man, blindfolded and handcuffed, with a rubber bullet.

“Just move the fence to the valley, and I'll drink coffee beside it with any Israeli,” sighs a villager. He says 70 of his olive trees have been cut down and two wells ruined. A youth, calling the barrier “the theft fence”, says that old farmers “will have heart attacks when the olive-picking season comes and they can't get to their trees.”

The Israelis began building the barrier during the second *intifada* (uprising) that started in 2000, when Palestinian suicide-bombers would sneak into Israel and blow themselves up, often in the midst of civilians. The Israeli government says the barrier's route round Nilin has been drawn purely to protect

Jewish settlers in the two nearby settlements. But the fence leaves almost an entire valley of olive trees belonging to Nilin's people on the Israeli side. The protesters say the barrier could run much closer to the settlements and still protect them. The villagers think the Israeli authorities are trying to expand the settlements' borders to allow for their future growth—as a straightforward land grab.

The continuing expansion of settlements plainly violates Israel's obligations under the latest American-brokered peace plan—and previous ones. The latest report of an Israeli advocacy group, Peace Now, based on field visits, aerial photographs and government data, suggests that Israel nearly doubled its rate of building in the settlements last year. Some 2,600 new housing units were built, most of them inside the fence, on Palestinian land. Another 125 buildings have gone up at settlers' outposts deemed illegal even by the Israeli government; in international law, all settlement building on the West Bank is illegal.

House-building for Jewish Israelis in East Jerusalem, which is mainly Arab-populated and lies on the Palestinian side of the 1967 border, has accelerated too. In the first half of this year the government issued 1,761 tenders for new houses to be built for Jewish Israelis in East Jerusalem, compared with 46 in all of 2007.

The left in France

Bon appétit, comrades!

Sep 4th 2008 | PARIS
From The Economist print edition

The mainstream left seems to be in trouble all over Europe. We look at the French Socialists and Germany's Social Democrats (see article)

AFP



EVERY August, French Socialists take their light cotton shirts and endless squabbles to La Rochelle for a "summer school". This year's was a dismal spectacle, marked by vapid declarations and shabby manoeuvring. One participant even lamented that the best speech he heard during the event was Barack Obama's at the Democratic convention in Denver.

The Socialists will pick a new leader at a congress in November, when François Hollande steps down after 11 years in the job. The candidates who have put their names forward include Ségolène Royal, the losing presidential candidate in 2007 and Mr Hollande's ex-partner, and Bertrand Delanoë, the mayor of Paris (above, right). But it is unlikely that a front-runner will emerge before the congress. Ms Royal, who is loathed by many of the old guard, hopes to lean on her regional base and popularity among new members. This was how she won the party primary to become the presidential candidate. Among left-leaning voters, she is still the favourite to fight the 2012 presidential election, according to a poll by TNS Sofres.

Yet the same poll suggests that Mr Delanoë would be the preferred choice to run the party. Fresh from re-election as mayor of Paris, Mr Delanoë is seen outside the capital as a "bobo", a bourgeois bohemian. The polls put him third choice as presidential candidate, after Ms Royal and the favourite, Dominique Strauss-Kahn, who runs the International Monetary Fund. To confuse matters, Martine Aubry (also above), architect of the 35-hour week, made a comeback at La Rochelle. Supported by the party's public-sector backbone, she is allying with Laurent Fabius, a former prime minister, to appeal to the left.

The trouble for the Socialists is that whoever takes over in November will have only limited authority, because party members may well pick somebody else as their presidential candidate. Not only does this trap the party in continuing personality clashes; but also it means that the battle of ideas is never over. For a party that has lost three presidential elections in a row, and that sits well to the left of European Social Democrats, this is worrisome.

In truth, the Socialists cannot decide whether to tack further to the left, so as to squash the far-left parties (including a new party led by Olivier Besancenot, a postman-cum-politician who hopes to inherit

the moribund Communist vote); or to shift to the centre to adapt to the realities of global capitalism. If anything, the left-leaning tendency is to the fore. When Manuel Valls, a young mayor, suggested dropping the word “Socialist” from the party’s name, he was derided. “I sometimes think that they prefer fighting over the choice of leader, because it is so much easier than agreeing on a doctrine,” comments Dominique Reynié, a leading political scientist.

To some extent, the French Socialists’ problems match those of the mainstream left across Europe. Last April’s election of Silvio Berlusconi in Italy reduced to three—Britain, Portugal and Spain—the countries in the European Union run by a mainstream centre-left party on its own. Both the British and Spanish left are in trouble, grappling with an economic downturn and a property bust. Gordon Brown looks highly likely to lose the next British election to David Cameron’s rejuvenated Conservatives. Germany’s Social Democrats, who share power with the right, are fast losing both members and popularity.

In a recent paper for a British think-tank, Progress, Denis MacShane, a Labour member of parliament, argued that “the democratic left in Europe faces its gravest crisis in more than half a century.” Yet only a decade ago, the left was in the ascendant and Europe’s voters had sent the right into the wilderness. So why is the democratic left now in decline?

One cyclical explanation is that a period in opposition has helped the right to reinvent itself and shake off an image of out-datedness. The Moderates in Sweden spent 12 years in opposition before winning power in 2006, after Fredrik Reinfeldt, Sweden’s young prime minister, transformed them into a modern, electable party. Britain’s Conservatives needed a decade out of power to come to terms with the case for recasting themselves as a nicer party. Mr Cameron has ruthlessly appropriated themes—greenery, inequality—that once belonged to the left. Even France’s Nicolas Sarkozy campaigned against the record of Jacques Chirac, his predecessor, and he also wrong-footed the left by borrowing both its talent—eg, Bernard Kouchner, his foreign minister—and its themes. He has put more minorities in government than the Socialists ever did.

Two structural reasons may also matter. One is the post-industrial decline of trade unions. This has robbed union-based parties of the left of their natural power base. It has also left them especially in hock to public-sector workers, who tend to be both removed from the globalised economy and hostile to reform. A second factor is Europe’s ageing population. Older voters tend to be more conservative. They are also more worried about things like immigration, Islam and security, which the left often has hang-ups about but are favourite issues of the right.

But the biggest problem for Europe’s mainstream left has been to face up to globalisation, a force it has spent much time denouncing. In this respect, Britain’s Labour Party is arguably an exception (as, to a lesser extent, are Spain’s Socialists). France’s Socialists campaigned in the 2007 election for a big rise in the minimum wage and ending loopholes in the 35-hour week. That they lost suggests that, even in a country that professes itself hostile to global capitalism, voters seem to understand that policies to trammel it are in the long run self-destructive.

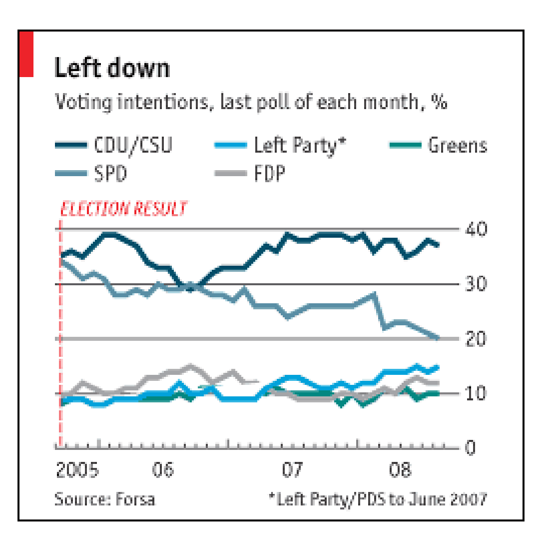
If they are not to be representatives only of a protected public sector, Europe’s centre-left parties need more convincing responses to popular unease over globalisation, especially as the downturn bites and job losses accelerate. But as Mr MacShane points out in his paper, this will require “telling truth to power in the trade-union movement and to the power of old established special interests”, and a reform of “the acquired rights of those in state employment who are protected from market pressures.” Unreformed, Europe’s old-style left risks turning into a permanent protest movement: capable of capturing the anti-incumbent vote at local and regional elections, as the French Socialists often do, but not of appealing more broadly to win power at national level.

Germany's Social Democrats

A party in disarray

Sep 4th 2008 | BERLIN
From The Economist print edition

A grand old party that is in a fine old mess, and also in search of a decent candidate



GERMANY'S Social Democratic Party (SPD) has a proud 145-year history. It mobilised Wilhelmine-era workers, opposed the Nazis and may have helped soften the iron curtain. Now it just looks old. In June its membership slumped below that of the Christian Democratic Union (CDU), its centre-right partner in Germany's "grand coalition", for the first time ever. A year before the next federal election, barely a fifth of voters back it (see chart). Its leader, Kurt Beck, is almost a laughing-stock. "It's certainly a difficult situation", concedes Niels Annen, an SPD parliamentarian, mildly.

Some of the SPD's ills are shared with the CDU, which is also losing members (if not as fast); both have long been losing support to smaller outfits. But the SPD's collectivist ethos may not suit a more individualist era. Its trade-union allies have been losing members for years. And it is also a handicap that the SPD has ruled Germany for the past ten years—first as leader of a coalition with the Greens and now as second fiddle to the CDU. Globalisation has caught up with Germany, exposing sclerosis in the welfare state. The SPD responded under Gerhard Schröder by toughening the rules for the unemployed. But this divided the party and alienated core supporters. The SPD is now "two parties under one roof", says Jürgen Falter, a political scientist at Mainz University.

The party is also trapped in a political pincer. To the right stands Chancellor Angela Merkel, who reaps credit whenever the grand coalition does something popular and leaves the SPD in agony when it does not. To its left looms the Left Party, a ragtag of west German malcontents tacked to the rump of former East Germany's old communists. With the backing of nearly 15% of voters, the Left is now Germany's third party and has broken into the legislatures of four western German states, largely by winning over disgruntled SPD voters.

AP



Steinmeier, ice-cream chancellor?

Under Mr Beck the SPD has been muddled. It has tried to soften the Schröder and Merkel reforms without abandoning them. Under SPD pressure the government has lengthened unemployment benefits for older workers and is enacting minimum wages in low-pay industries. This appeals to the party's left and to the unions. "The values of old labour are quite popular right now," claims Mr Annen. The SPD has also begun to repair relations with the unions. But the party's right wing, which includes its most senior leaders, is resisting the leftward tilt, confusing voters about where it stands.

Worse, the SPD has botched its handling of the Left Party. Mr Beck first ruled out co-operation in the west between the SPD and the Left. But when voters in Hesse gave the Left Party the balance of power in an election last January, he changed his mind. Now the would-be SPD state premier, Andrea Ypsilanti, plans to replace a caretaker government with one led by the SPD but backed by the Left Party, a first for a west German state. One poll predicts that in Saarland's election next August, the Left Party will overtake the SPD, deepening the dilemma over whether to treat it as pariah or partner. There will be no partnership at national level after next year's federal election, Mr Beck still insists. But will voters believe him?

The SPD lacks a messenger as well as a message. The most likely challenger to Ms Merkel as chancellor is the foreign minister, Frank-Walter Steinmeier, the SPD's most popular senior figure. An architect of Mr Schröder's reforms, he leans towards the right. Mr Annen says “the left will support him” provided the party rallies round a common programme. The task of drafting it has begun, with 60 left-leaning members seeking to cut the pension age and bring back a wealth tax. Johannes Kahrs, leader of a reformist group, says optimistically that the party's two wings offer voters an appealing package of economic pragmatism and social progress. Yet even if Mr Steinmeier takes the helm, victory next year still looks a long shot.

Alitalia and the taxpayer

On a wing and a taxpayer's prayer

Sep 4th 2008 | ROME
From The Economist print edition

A botched and expensive plan to salvage a beleaguered airline

WHAT price patriotism? In the case of Alitalia, Italy's long-crippled flag-carrier, the answer is about €5 billion ($7.3 billion)—or some €125 for every one of Italy's 40m taxpayers.

Even before the operation mounted by Silvio Berlusconi's government to preserve the airline's *Italianita*, €3 billion of public money had gone into it. The rescue, known as Operation Phoenix, will funnel Alitalia's €1.2 billion debts and its least profitable bits into a "bad company" that is dumped on the Italian treasury. A report by the Bruno Leoni Institute, a liberal think-tank, concludes that "altogether, the cost to the state could reach almost €2 billion." But press estimates have ranged a lot higher, and many details remain undecided.

On August 28th the cabinet offered to guarantee seven years of alternative employment or welfare protection to the 5,000 or so workers who stand to lose their jobs. The bill for this guarantee will emerge only after talks with the unions that began in earnest on September 4th (if the talks fail, that could torpedo the entire project). Nor is it clear if the treasury will ever get back the €300m it ploughed into Alitalia, at Mr Berlusconi's request, in April.

And these are merely the quantifiable costs. Operation Phoenix rolls Alitalia's main domestic rival, Air One, into the new company, stifling competition in Italy, particularly on the lucrative Rome-Milan (Linate) route. The government is exempting the new company for three years from restrictions imposed by Italy's anti-trust authority. The plan also confirms the loss of Milan Malpensa's hub status. Much inter-continental traffic from Italy's industrial heartland will thus be routed through Frankfurt, Paris or London. Which of the three benefits may depend on the new company's choice of foreign partner. Air France-KLM (which walked away from an earlier bid) and Lufthansa are both reported to be interested. But British Airways too has been sniffing around.

The rationale of Operation Phoenix was never economic, however. Its aim was merely to honour Mr Berlusconi's claim, made ahead of April's election, that he had a better solution for Alitalia than the Franco-Dutch offer, which he termed "offensive" (but which would have relieved taxpayers of Alitalia's debts). He insisted that a consortium of Italian entrepreneurs was waiting for its chance. After several months of delay, a syndicate has indeed been produced.

Reuters

A costly goodbye to all that

The 16 investors, who are said to be ready to put up €1 billion, are led by Roberto Colaninno, boss of the Piaggio scooter firm. His role appears to give the lie to claims that Mr Berlusconi has strong-armed cronies into backing the project, for Mr Colaninno is linked with the centre-left (indeed, his son is the opposition's industry spokesman). "If you're an entrepreneur, a challenge like this appeals to you, like a duty," he told the daily *La Repubblica* on August 29th. Even union leaders have given him the benefit of the doubt.

But scepticism over the interests of his partners is rife. "I don't know of any vegetarian tigers," comments Marco Ponti, professor of transport economics at the Polytechnic University of Milan. "And I don't know of any businesspeople ready to lose money for the sake of *Italianita*". Like many Italian analysts, he suspects that they have been assured that, if things go wrong, the government will do them "favours in other areas".

All this should be of keen interest to the European Commission. However, one of Mr Berlusconi's first moves was to secure the transport portfolio there for a supporter, Antonio Tajani. Some of Alitalia's rivals may yet complain to Brussels. But even before Mr Colaninno had arrived to explain Operation Phoenix, Mr

Tajani had praised it for “favouring the [free] market and the principle of competition.”

The Markov case

Piccadilly circus

Sep 4th 2008
From The Economist print edition

New evidence about the murder of a Bulgarian émigré

HIS code-name was Piccadilly. An Italian-born Dane, he was one of the most mysterious figures of the cold war. According to Bulgarian secret-service files, he was the agent who assassinated Georgi Markov, code-named "Wanderer", a Bulgarian émigré broadcaster who was poisoned in London in 1978. Destruction of documents and official obstruction seemed to have left the trail cold. But in a book being published on September 6th, Hristo Hristov, a Bulgarian investigative journalist, gives the results of searching 97 previously classified files, obtained after a three-year legal battle. They show details of training and payments to Piccadilly, and of the close links between the Bulgarian secret services and the Soviet KGB over the murder.

Clearly Piccadilly was no ordinary agent. Although described in the files as having the mentality of a "petty international criminal" when recruited, he had extensive and elaborate training. Shortly before the Markov murder, he was given the rare honour of a face-to-face meeting with Bulgaria's top spymaster, Vasil Kotsev. He returned to Bulgaria shortly after the murder, to receive a medal. He enjoyed a sinecure until 1990; his whereabouts now are unknown.

The files also show the Bulgarian secret services alerting their KGB colleagues in Moscow to the damage being done by Markov's broadcasts. "He insolently mocked the truth about the rights of Bulgarian and Soviet citizens to travel abroad", says a 1975 letter. Mr Hristov has also unearthed evidence of the co-operation between the two services on the use of poison for assassination (Markov was murdered with a ricin-coated pellet, fired from an adapted pen; an umbrella was dropped nearby to distract him). Two high-level Bulgarian secret-service delegations visited the KGB in Moscow months before the murder. According to a letter from Mr Kotsev, they discussed "specific joint operations" against "hostile émigrés". After the murder, Bulgaria handed out medals to the KGB officials at the meetings.

According to the files, Piccadilly's real name is Francesco Gullino. On September 11th, the Bulgarian investigation into the case will close under the country's statute of limitations. The main investigator, Andrei Tsvetanov, asserts that Markov died because of a British medical blunder. Mr Hristov's revelations suggest that renewed investigations, not another cover-up, are in order.

Charlemagne

The heretical Czechs

Sep 4th 2008
From The Economist print edition

The pragmatic sceptics who will have the next European-Union presidency

Illustration by Peter Schrank



THROUGHOUT history, heretics have faced unusually horrid punishments—and it is no mystery why. Most faith-based systems can withstand the threat from non-believers, sinners and the like. But heretics are a menace from within: dissenting believers, who question key articles of faith. When it comes to the faith-based project of European political integration, the Czech Republic is a dangerously heretical place. This does not mean that the Czechs are hostile to the European Union—though many in Brussels lazily put them high up in their lists of "Eurosceptics". Rather, the Czechs have a taste for something more subversive: the questioning of big planks of EU conventional wisdom.

This matters a lot right now. On January 1st the Czechs will take over the rotating presidency of the EU, chairing all meetings and setting the agenda for the following six months. The future of the Lisbon treaty is sure to come up on their watch, as the Irish government scrambles to find ways to overcome the no vote cast by its electorate last June. And in foreign policy, it is a safe bet that Russia will muscle its way up the EU's agenda in 2009.

On both fronts, the Czechs are guilty of heterodoxy. British Conservatives like to claim the centre-right Civic Democrats, known by their Czech initials as the ODS, as their closest ideological allies in Europe. (We are identical, a Tory member of the European Parliament supposedly boasted, except that they don't understand cricket.) This is not strictly correct. The British Tories say they will try to scupper Lisbon if it is not in force by the time they come to power. In contrast, the ODS-led Czech government is committed to ratifying the text, probably by the end of the year.

That said, Czech ministers do not buy the French or German line that Lisbon is a vital treaty that will magically transform the union into a world power. Some big EU countries depict the loss of Lisbon as a catastrophe, comments the foreign minister, Karel Schwarzenberg, but "of course it is not." Losing Lisbon would "make life difficult", he concedes, and would be hard to explain to voters after so many years of fuss. But the EU works with its current rules "quite well", so the Irish vote is "not the end of the world." Some fervent Europeans want Ireland to be threatened with expulsion from the EU if they do not ratify Lisbon soon. A Czech presidency would not stand for such bullying.

When it comes to Russia, the Czechs are heretics, too. They are less vocally hawkish than Poland and the Baltic states. But Czech leaders do not, deep down, believe in the EU's common line on Russia, which amounts to the rationalisation of impotence. The current consensus is that proffering the hand of friendship is a sound strategy because Russia will one day realise that co-operation is in its interests.

Senior Czechs say this is not a strategy, it is just verbiage. They also suspect the EU will need a real Russia strategy quite soon.

On a 2007 visit to talk over EU affairs, the German chancellor, Angela Merkel, said the Czechs reminded her of modern-day Hussites—followers of Jan Hus, who was burnt at the stake in 1415 for challenging the Roman Catholic Church. This was a shrewd observation, says Alexandr Vondra, a deputy prime minister. The Hussite movement was crushed amid bitter in-fighting, and the Czechs remained Catholic. But Hus remains a national hero, and his legacy helps to explain why Czech views of the EU differ from those of such neighbours as Germany or Slovakia. Mr Vondra suggests that Czechs think like “classic reformation countries”, such as the Netherlands or Sweden.

The Czech president, Vaclav Klaus, is an arch-critic of the EU (he has called the Lisbon treaty “detrimental to freedom and democracy”). Mr Klaus’s powers are mostly ceremonial, but he has influence. The Czechs have yet to ratify Lisbon, after Mr Klaus’s ODS allies in the upper-house Senate demanded that the text be sent to the constitutional court for vetting. But Mr Klaus’s clout has limits. The court is expected to approve Lisbon, paving the way for a tight parliamentary vote at the end of the year (a three-fifths majority is needed in both houses: perhaps a quarter of the Senate are Eurosceptics in the Klaus mould). There is also a big gap between Mr Klaus and the voters. Two-thirds of Czechs told the latest Eurobarometer poll that their country has benefited from membership, above the EU average. And ODS voters are more pro-European than most others.

Kings and princes

Jiri Pehe, a one-time aide to Mr Klaus’s predecessor, Vaclav Havel, explains that Czechs see their presidents as philosopher-kings, whose strong opinions may not have concrete implications for everyday action. Many Czechs adored Mr Havel, he notes, and they loved hearing him denounce consumerism. Then they went shopping, because they were “consumerist as hell”.

Mr Schwarzenberg, in private life a prince with roots in both the Czech Republic and Austria, draws a revealing comparison between the two countries. Both feel what he calls “fed-upness” with EU rules that impinge on local traditions, such as hunting. But Austrian grumpiness goes much deeper. Both countries gained when the EU enlarged to take in countries from the former communist block: the Czechs because they got in, and the Austrians because they made a mint in the east. Yet Austrians have never accepted that the EU helped secure these eastern markets for them. They think they were “so good, and so modern” that they would have cleaned up anyway, says Mr Schwarzenberg.

Czechs see what they have gained, and accordingly want the EU to work. It is just that they are not interested in how. History has taught Czechs to think sceptically, says Mr Vondra. As a much-invaded people, Czechs “have problems approaching anything with excitement.” Czechs believe in Europe, but not in the grandiose visions of the project: the endless treaties and institutional changes that will solve all problems. In Brussels such pragmatism is heretical. Next year promises to be interesting.

The economy

Home's where the hurt is

Sep 4th 2008
From The Economist print edition

PA



There have been far worse times for the economy but few for a chancellor

IT WAS, perhaps, frustration at his own helplessness that prompted Alistair Darling's dire prognosis. The chancellor of the exchequer told the *Guardian*, in an interview reported on August 30th, that economic times were "arguably the worst they've been in 60 years". His remarks raised fears of a harder economic landing for Britain than predicted and helped push sterling to new lows against the euro. His slip may have had more to do with his own anxieties (see article) than with the fate of the economy.

Only the terminally gloomy expect a downturn to match the deep recession of the early 1990s, or a repeat of the grim 1970s. Yet Mr Darling had a point, even if he made it clumsily. It is rare to be hit by so many problems in such a short space of time. A spike in the cost of oil and food has poked a big hole in consumers' pockets, leaving less money for other spending. Meanwhile the banking crisis has cut the supply of credit, hastening a collapse in the housing market.

This unusual combination makes it harder to repeat the policy tricks that banished the two previous recession scares, in 1998 and 2001. The Asian crisis and the later dotcom bust affected GDP growth and inflation in much the same way. The Bank of England could safely cut interest rates to support spending then because the "shock" to the economy was likely to push down inflation too. Today's noxious mix of commodity-led inflation and tighter credit makes relaxing policy far trickier. Though the bank initially cut interest rates from 5.75% to 5%, it has not reduced them further for fear of stoking inflation.

That worry would limit the scope for fiscal stimulus too. In August the bank's monetary-policy committee (MPC) forecast that consumer-price inflation would fall back to its official 2% target, but only after a period of economic weakness had drawn its sting. If the government tries to stave off that adjustment by massive fiscal means, it might delay the further interest-rate cuts that financial markets expect in coming months. "The more the government does, the more the MPC can't do," says Geoffrey Dicks, an economist at the Royal Bank of Scotland.

The rickety state of the public finances also argues against a big fiscal fillip. The rules brought in by Gordon Brown when he was chancellor were meant to limit borrowing during prosperous times, but Britain went into the downturn with a yawning budget deficit instead. It widened to £35 billion ($70 billion)—around 2½% of GDP— in the year to March, and Mr Dicks reckons this year's deficit could be double that.

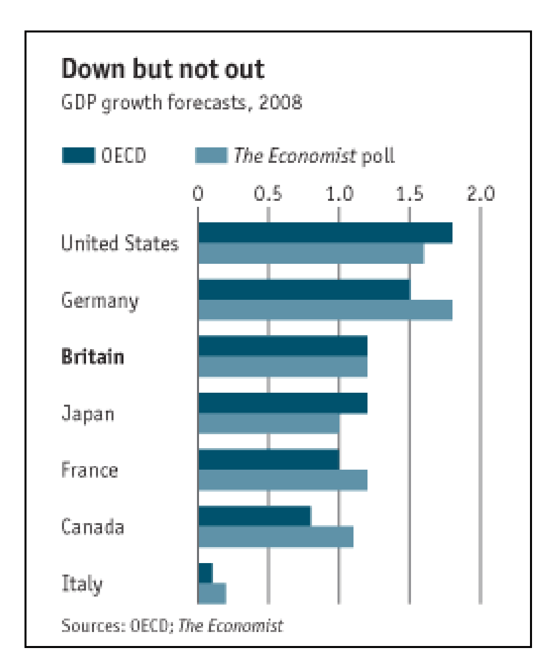
Against this backdrop, on September 2nd the government announced a number of modest measures to

support the housing market and help its victims. The threshold at which stamp duty applies to home purchases was raised for a year from £125,000 ($222,000) to £175,000. A shared-equity scheme, financed jointly with property developers, will offer some first-time buyers a five-year interest-free loan of up to 30% of the price of a newly-built home. Councils and housing associations will be able to help struggling homeowners by buying all or part of their homes and leasing them back. And the safety net for the hardest-hit homeowners was extended.

These measures may cost around £1.6 billion, a trifling figure. But their modesty is cause more for relief than regret. While the schemes to help debtors in distress are harder to fault, many question the wisdom of coaxing first-time buyers into a falling market. House prices have already dropped 11% in the past year, and David Miles, an economist at Morgan Stanley, an investment bank, reckons they may lose a further 10%. In any case, it is banks' reluctance to lend, not a buyers' strike, that has the housing market on its knees.

The puzzle about the British economy is not that it is doing badly but that it is not doing worse. The financial sector, now slowing, accounts for a fair chunk of GDP. Britain's housing boom was one of the world's largest; its household debt-to-income ratio is higher than America's; and, as in America, a long consumption boom left a large current-account deficit. All this makes Britain more vulnerable than most to a credit crunch.

Yet other big economies are faring just about as badly. Figures released on September 3rd confirmed that the euro area shrank in the three months to June. Of its three largest economies, only Germany's grew more quickly than Britain's over the past year, and then only just. France and Italy have struggled harder, and are hampered by large fiscal deficits of their own. The OECD this week pointed to Britain as the only big rich-world economy that will suffer a minor technical recession—two quarters of falling GDP—this year. But its full-year forecasts suggest that Britain will do better than many of its peers (see chart).



That the euro area is struggling too may be little solace to Mr Darling, since more than half of Britain's exports go there. Still, there are signs that sterling's slump is lifting the domestic economy. Firms and households have cut back on pricier imports, and the British Retail Consortium says retail sales in London have bucked the gloomier national trend, thanks partly to tourists lured by a cheaper pound.

Britain is more likely to avoid a nasty economic downturn if inflation fears fade quickly and wage claims remain muted. The recent sharp fall in oil prices (and indeed Mr Darling's apocalyptic comments) will help. The euro zone has more to worry about, for many of its pay deals are explicitly linked to prices. It must comfort Mr Darling to reflect that even the most confident economic forecasts often turn out to be wrong. At the start of this year, recession in America seemed a near-certainty to many. Now America's economy looks the best of a bad bunch.

The army in Afghanistan

Dam difficult

Sep 4th 2008
From The Economist print edition

Britain scores a military success. But it will take much more to beat the Taliban

THE earthen wall holding back the turquoise lake at Kajaki has stood as a rebuke to British forces for more than two years. Work on refurbishing its hydroelectric power station all but stopped when British and other NATO troops arrived in southern Afghanistan in 2006, reigniting the war with the Taliban.

More than two seasons of inconclusive fighting, and the death of more than 100 British soldiers, have failed to secure southern Afghanistan. If anything, the Taliban have become bolder, staging more ambitious attacks and extending the insurgency to the gates of Kabul. As the Americans have reinforced understrength British forces in Helmand, relations between the allies have become tetchy. The Afghan government, too, has been critical of Western troops for killing Afghan civilians.

But Kajaki now counts as a badly-needed success, after a great convoy lumbered through the desert to deliver a Chinese-built turbine on September 2nd. Operation Oqab Tsuka (Eagle's Summit) involved the deployment of massive firepower—some 5,000 troops, plus hundreds of special forces, 30 helicopters, two reconnaissance drones and 20 jets. Added to this was a large dose of guile to fool the Taliban into thinking that NATO would use the main road. Instead, sappers cut a new track through the desert and mountains. Still, they had to fight hard; the British say they killed some 250 Taliban over five days.

The soldiers celebrated the arrival of the 100-vehicle convoy with understandable excitement. It was the biggest logistical move since the second world war, they said. Some evoked the (failed) battle of Arnhem bridge in 1944; others drew a parallel with the (successful) lifting of the siege of Mafikeng (then Mafeking) in 1900. Such exaggerated comparisons—raising lightly armed Taliban guerrillas to the level of the organised German and Boer armies—say more about the troubles facing the British army than about its successes. The British do not have the forces to hold the ground they secured to allow the convoy to pass. Still, says their commander, Brigadier Mark Carleton-Smith, "in the sweep of the campaign, this marks the end of the beginning."

Perhaps. But the end of the war will be a long time coming. It will take at least two years to get the power station up to its full capacity of 51MW and lay vulnerable new transmission lines. Electricity is the basis of any long-term economic development, which in turn is essential to winning hearts and minds. Without power there can be no factories to draw young men away from the Taliban; and without refrigeration there is little hope of developing, storing and exporting crops other than opium poppies.

But beating the Taliban will take much more, not least extending the writ of the weak and corrupt Afghan government. Without that, generating more power may end up enriching the Taliban—by multiplying the number of households they can "tax" for using electricity.

The City of London

Defying augury

Sep 4th 2008
From The Economist print edition

Can the stock exchange and the City see off the competition?

AS THE British economy heads straight for the doldrums, the City is struggling too. Recent moves by the London Stock Exchange designed to see off encroaching rivals may cost the LSE custom rather than increase it. And even if the 300-year-old market can change its ways, the financial centre it buttresses may well be shaky. The signs are not good.

This week the LSE slashed its trading fees to match those of electronic trading platforms (known as MTFs), and said it would allow ultra-fast computerised traders to put their machines close to the LSE's own computers. This will save the increasingly important program traders precious nanoseconds between sending an order and executing the trade. In July the stock exchange struck a deal with Lehman Brothers, an investment bank, to form Baikal, a so-called “dark pool” that allows high-volume trades to be executed bit-by-bit off-exchange and out of the public eye—that is, in competition with the LSE itself. The LSE still has a near-monopoly in listing stocks and providing price data, but increasing volumes are being traded on electronic platforms. Chi-X, launched last year, already has 15% of London's share-trading volume. Other rivals are queuing up.

The LSE may be able to shrug off such virtual-market upstarts but it has yet to figure out how to expand its business as Europe's flagship exchange. AIM, its market for international and domestic start-up companies, is shrinking for the first time. And the LSE's merger last year with the Italian Stock Exchange has proved a disaster.

Its woes are symptomatic of waxing disenchantment with London as a financial centre. City types say the brightest and richest are moving to other parts, particularly Asia. London is uncomfortable and expensive. A £30,000 ($53,000) flat tax on foreign residents and a rise in capital-gains tax has hit the whizz kids in the pocket. Lay-offs at shrinking banks—35,000 have been announced and up to 100,000 are expected—have depressed job and bonus prospects. The golden days, when adding complexity to financial products brought immediate reward, are over.

Then there is London's reputation as a place to do business. The handling of Northern Rock, a troubled mortgage lender, revealed regulators with feet of clay. City lobbyists are fighting cumbersome backdoor financial meddling from Brussels. The City of London's global financial-centres index—which in March put London and New York well ahead of other centres, though losing ground—will probably show that the gap has narrowed further when new results come out this month.

Should London care? The 2012 Olympics will provide displacement activity; London's other invisible-export earners—shipping, insurance, commodities, professional services—seem unaffected. But the shrinking of wholesale financial markets could have a direct impact on the skyline.

Office rentals are falling, particularly in the City. (London's West End, the traditional haunt of hedge funds and other wealth managers, seems marginally more resilient.) Building projects big enough to eclipse the Gherkin, Swiss Re's London headquarters and the City's most egregious landmark, could be delayed or shelved. These include the 288-metre Helter-Skelter (though demolition for it continues) and the Shard, a 310-metre splinter which, if it goes ahead, would be the highest building in Europe. Unless the City manages to reinvent itself, July 2007 may prove to have been London's peak as a financial centre.

Gordon Brown's Scotland

Backyard blues

Sep 4th 2008 | EDINBURGH
From The Economist print edition

The prime minister's native land is no longer his redoubt

NOT only is Gordon Brown leading a country the OECD claims is about to enter recession; he also flew north on September 4th to find the part of it he calls home in revolt. Chief among the prime minister's difficulties in Scotland is a resurgent Scottish National Party (SNP), which is expected to win a parliamentary by-election in the Labour-held seat of Glenrothes.

The contest, which was prompted by the death of Labour MP John MacDougall in August, is unlikely to take place before late October. The SNP holds the equivalent seat in the Scottish Parliament and needs a 14.5% swing, less than the 22% it secured when it snagged Glasgow East from Labour in a by-election in July, in order to send an MP to Westminster.

If Labour is defeated it will be yet another sign that Mr Brown's premiership is foundering on Scottish rocks as well as on Britain's economic woes. Wendy Alexander, a Brown protégée, resigned as its leader in the Scottish Parliament at the end of June over a controversy involving political donations. Three people, two of them former Scottish ministers, are vying for her job; a choice is due on September 13th.

The SNP has been on the up since it emerged as the largest party in the 2007 Scottish elections. As Labour, the Conservatives and the Liberal Democrats were unwilling to form a coalition, the SNP took power with only 47 seats (and two Green allies) in the 129-seat assembly. A series of populist measures—cutting prescription charges, abolishing bridge tolls and freezing council tax—boosted the SNP's popularity and deterred its opponents from forcing an election to unseat it.

Alex Salmond, the SNP leader and Scotland's first minister, is now a thorn in the prime minister's side. He has recently demanded that Mr Brown use tax revenues from North Sea oil to subsidise the fuel bills of farmers, fishermen and hauliers, attacked the government over post-office closures and condemned its withdrawal of a plan to subsidise the production of renewable energy on Scottish islands.

He is helped by disarray within his opponents' ranks. All three candidates to lead Scottish Labour say the party must have more authority over Westminster MPs with Scottish seats. This perturbs those such as Tom Harris, who says it would be "entirely impractical" to have MPs loyal to a Scottish leader but not to the prime minister. The Lib Dems have also been busy choosing a new leader, electing Tavish Scott, a former minister, on August 26th. He promises robust opposition to the SNP.

Mr Salmond will not be too worried. His new legislative programme, unveiled on September 3rd, contains some popular ideas—such as replacing the council tax, which is levied on property, with a local income tax. This could cause a crowd-pleasing row with London, for making the sums add up depends on Mr Salmond getting hold of £400m paid by Britain's Treasury to poor Scots struggling to meet their council-tax bills. Labour ministers retort that if the tax is abolished, there will be no further need to hand over the money.

And Mr Salmond may take comfort in another thought. Though his popularity has yet to boost support for Scottish independence (the SNP's goal, on which he hopes to hold a referendum in 2010), a future Tory government—with almost no Westminster seats in Scotland—would widen cracks in the union. Winning Glenrothes would help that come to pass.

Estate management

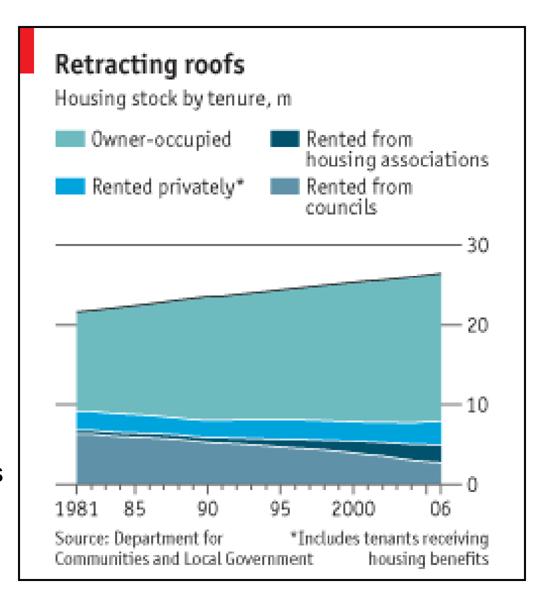
Sep 4th 2008
From The Economist print edition

New proposals are likely to expand council housing

HALF the government's efforts this week were spent trying to convince wary buyers to set off down the risky path of home ownership. Soft loans and a temporary break from stamp duty, dangled tantalisingly on September 2nd, might tempt a few to take the plunge. But those who are weighing the risks and rewards of buying must have been alarmed that the government was simultaneously promoting rescue packages for those who had entered the housing market and got burned.

Chief among these bail-outs was a £200m "mortgage-rescue" scheme, under which some 6,000 households in danger of having their home repossessed are to be saved. Councils and housing associations will be able to buy a share of the property, reducing the occupier's mortgage. In some cases the authorities could buy it outright and let it back to its erstwhile owner, turning it into de facto social housing.

The modest funding for this scheme means that it will not be revolutionary. But giving struggling homeowners the right to rent their property from the council—the opposite of Margaret Thatcher's 1980 policy of giving council tenants the "right to buy" their home—marks new thinking on state-funded housing, which has been in long decline. In 1981 social houses—that is, accommodation provided cheaply to the poor by councils or housing associations—made up nearly a third of Britain's housing stock; they now make up less than a fifth (see chart). Enthusiastic take-up of the right to buy is the main reason; slower building of new social housing (it halved between the early 1990s and early 2000s, to under 20,000 units a year) helped.



Labour first turned its attention to improving the condition of existing social housing, pouring £20 billion into refurbishment in its first decade in office. Now it is increasing the quantity: the aim is to build 45,000 homes in 2010 and more in future years. (This week's announcements included a promise to bring forward some of this building work.) It has also tightened up the right-to-buy scheme, capping the discounts that tenants are entitled to, in order to prevent more stock slipping away. Last year was the first time since 1983 that more social housing was built than sold.

Still, an acute shortage remains: 1.7m households are on the waiting list for council housing, and 87,000 of them are in temporary accommodation, which is disruptive for families and expensive for councils. Housing benefit, claimed by 4m households and worth £71 per week on average, helps relieve the shortage. But Shelter, a charity, points out that many landlords won't take tenants who receive it.

Will the new shared-ownership plans work? A similar scheme already exists in Liverpool. Homeowners who need to move but can't secure a big enough mortgage can apply for up to £40,000 from the council to plug the gap. The council gets an appropriate chunk of equity in the new home, which it can later sell back to the occupant or cash in if the property is sold. Flo Clucas, deputy leader of the council, says it has enabled the city to press on with doing up poor areas. Previously, those who owned homes earmarked for demolition would be offered the market rate for their property, which often wasn't enough to buy elsewhere. Now, instead of going back to renting, they can buy a posher place with the council's help. The scheme is expected to help 120 households next year.

On the plan to let councils buy up the homes of those who can't pay their mortgage and let them carry on as renters, Ms Clucas is more sceptical. Years of shrinking social housing have left councils short of experience and staff. Like first-time buyers, the government should be careful of biting off more than it

can chew.

Faiths and schools

Religious rights and wrongs

Sep 4th 2008
From The Economist print edition

A campaign to loosen the grip of the godly on state education

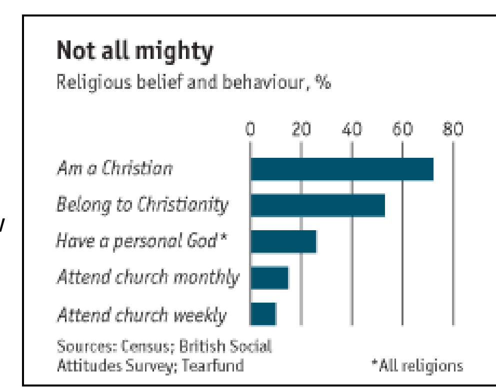
IN BRITAIN, a largely secular country where churches retain their historic role in education, there is little agreement about the place of religion in schools. Some fret that schools for children of a particular faith foster segregation; others cite parents' right to educate their offspring as they see fit, adding that religious schools outperform secular ones (though opponents say that is because richer children go to them). Such rows tend to entrench attitudes, rather than lead to resolution.

Now campaigners, both godly and godless, are trying to change that. September 1st saw the launch of Accord, a coalition of Christians, Jews, humanists, secularists and teachers who hope to sidestep fruitless rows about whether religions should run schools and instead get them to do it more fairly. They take issue with schools favouring children of their own faith in admissions: "Churches should be championing social justice and equality for all in education, not privileging their own," says the Rev Christopher Rowland of Accord. And they want to stop schools reserving jobs for co-religionists and those who follow church teachings in their private lives.

Accord's aims go against the tide. Tony Blair believed that religious schools transmit morals and discipline. Under his watch as prime minister 7,000 Christian schools, mostly inherited from the days before state education, have been joined by the first Islamic, Sikh and Hindu ones, and the number of Jewish schools has grown too. Up to 100 private Islamic schools are on track for state funding. Many academies (semi-independent state schools) are run by religious groups.

Mr Blair's successor, Gordon Brown, is thought to be less fervent. Ed Balls, his schools secretary, says he has no desire for more religious schools. Fewer of them, though, seems out of the question: "Faith schools are successful, thriving, popular and here to stay," says Kevin Brennan, the children's minister. And policies favouring them are still being implemented. A law passed in 2006, and brought into force on September 1st, extended religious schools' right to reserve posts for those of their own faith, if there is a "genuine occupational requirement". Claiming that cleaners may have to help pupils through crises of faith probably won't wash; making the same claim for senior staff probably would.

This all seems odd, as churches' influence outside schools is waning. When asked if they are Christian, respondents are less likely to say yes the more tightly the question is phrased (see chart). Those of other religions, and recent immigrants, are more devout, but only a quarter of all Britons say they have a "personal God".



The right to select pupils by religion also sits oddly with the main political parties' abhorrence of selection by another criterion—ability. During a row over academic selection in 2006 Ruth Kelly, then education secretary, said her party wanted "parents choosing schools, not schools choosing parents". The formula was repeated by the Conservative leader, David Cameron, during his party's near-implosion over grammar schools in 2007.

Politicians cling to religious schools because some parents do, desperate for an alternative to bog-standard comprehensives. But in the end, worldly factors may settle heathens' and godbotherers' differences. Head teachers are already scarce; religious schools, especially Catholic ones, are suffering most, says John Howson, a recruitment specialist, and a looming retirement bulge will not help. Religious schools may have to become less exclusive—or lose out in the battle for talent.

Titian in Britain

Exit, unfunded?

Sep 4th 2008
From The Economist print edition

The fate of two Old Masters reveals the strengths and weaknesses of the laws governing the sale of art

PAINTING, said Ambrose Bierce, is "the art of protecting flat surfaces from the weather and exposing them to the critic". In Titian's case, the critics have purred with enthusiasm. Lucian Freud hailed the two paintings offered for sale by the Duke of Sutherland, *Diana and Actaeon* and *Diana and Callisto*, as "simply the most beautiful pictures in the world". And the Bridgewater Collection to which they belong is widely regarded as the world's most important private collection of Old Masters.

Yet keeping the paintings in the country will be a struggle. Although the duke is offering the Titians for much less than their market price, the National Galleries in England and Scotland still have to find £100m—almost five times the highest amount ever raised to keep art in Britain. And Britain's notoriously liberal art-export laws do not provide much of a safety net. Between 1995 and 2005, 211 works of art totalling £274m in value were judged pre-eminent and worth keeping; yet money could be raised to hang on to only £105m-worth of them.

What Britain does keep, however, it is good at keeping together: its tax rules exempt collectors from inheritance tax on their art as long as they put it on public display and do not sell it. As Gerry McQuillan of the Museums, Libraries and Archives Council points out, this has allowed collections of international significance which might otherwise have been broken up to pay death duties, to remain intact.

The problem, according to David Barrie, director of The Art Fund, a charity, is that when no one dies, the law is less helpful. Britons selling their art to public galleries may receive a small reduction in the associated taxes known as a *douceur*; but unlike countries, such as Ireland or America, which accept donations of art in lieu of income tax, Britain otherwise provides scant incentives for philanthropy by the living. The Treasury turned down proposals to introduce such measures in 2004. Meanwhile French firms that buy art to put on public display can offset its cost against their company tax.

Without such incentives Britain has to rely on charities and public funds to keep top-quality art in the country. Yet most of its national museums no longer receive a ring-fenced grant with which to purchase new works of art; this, combined with the recent surge in art prices, means that most are forced to pare back acquisitions in order to meet their running costs. And since entry to state-owned museums is free, they miss out on revenues that many foreign rivals enjoy.

Two other sources of funding have also been less fertile of late. The National Lottery is helping to bankroll the London Olympics and has less to spare for art. And recent tax changes have left Britain's non-domiciled rich folk, so often knights in shining armour for beleaguered curators, feeling particularly unloved.

Perhaps there are higher priorities for government spending; perhaps other newly rich cities deserve a crack at the Venetian painter's works. It still seems a shame for Britain to lose them.



Bagehot

Deny, deflect, detonate

Sep 4th 2008
From The Economist print edition

Is economic woe driving the government's political problems or vice versa?

Illustration by Steve O'Brien



WHEN the *Kursk*, a Russian submarine, sank in 2000, Vladimir Putin's government at first pretended the situation was not as awful as it seemed. Next, it blamed outsiders (in the shape of a phantom foreign craft). Finally, when obfuscation would no longer wash, it claimed that the crew had all died immediately, and thus that nothing the authorities might have done could have helped. In its efforts to explain Britain's subsiding economy, the government of Gordon Brown—another leader installed by opaque anointment rather than open choice—seems to have adopted a similar approach to crisis management. The effect can be summarised as deny, deflect and detonate.

For as long as he could, Mr Brown denied the seriousness of the downturn. Things, he insisted, had been much worse in the early 1990s; the government was taking the "tough long-term decisions" needed to avert a repeat of such Tory-inflicted hardship. Growth would remain stronger than the gloomy analysts were predicting. Next came deflect: when price rises and the collapse of the housing market became too stark to spin away, Mr Brown acknowledged the difficulties but stressed that, in the words of the song, "It wasn't me". He deflected the blame on to irresponsible foreigners, such as greedy American financiers and Arab oil sheikhs. He and his chancellor, Alistair Darling, nevertheless insisted that Britain's "resilient" economy would withstand the credit crunch and other global squalls better than others.

Until, in an interview published in the *Guardian* on August 30th, Mr Darling remarked that these economic times were "the worst they've been in 60 years". Even allowing for his subsequent "clarification"—that he was referring to global circumstances rather than Britain's prospects specifically—the claim looks odd. Britain, say the OECD and others, is heading for recession; unemployment and inflation are edging up. That feels calamitous for the newly jobless and overstretched borrowers. But only after a long, pampering stretch of growth could the situation be regarded as catastrophic. By contrast, in 1949 the pound was devalued and petrol and clothes rationed. In the 1970s, there were the "three-day week" and an IMF bail-out; and so on.

Why, then, did Mr Darling detonate—playing up rather than minimising the problem? A relatively charitable reading is that, by exaggerating the difficulty, he was hoping to make the modesty of the government's response to it appear defensible. Until recently, that would have seemed an adequate explanation. These days, however, the situation is more ragged, and more reprehensible, than it was, say, last autumn, when the government tried to retrieve its position in the polls by hastily reforming inheritance tax. Pronouncements now sometimes seem driven by the interests of individuals—chiefly but

not exclusively Mr Brown.

A stark shift from deny to deflect took place after Mr Brown began to lose elections this spring. Some of his Labour colleagues started plotting to depose him; to defend himself, Mr Brown swallowed his pride and set out to show the doubters that he could feel the voters' pain—while blaming it on somebody else.

It didn't work: Labour continued to lose elections, and the plots intensified. For the moment—at least until the Labour Party conference later this month—they are generally more sub-plots than headline ones. Potential replacements for Mr Brown are letting it be known that they would like his job, but also that they do not intend to assassinate him themselves (though Charles Clarke, a former minister, raised the temperature on September 4th by saying Mr Brown might have only "months" left in office). Meanwhile others have been surreptitiously angling for other posts and heads, such as Mr Darling's. This sub-plotting lies behind the latest manoeuvres of both the chancellor and prime minister.

The purpose of Mr Darling's detonation becomes clearer in context. Rumour has it that he is destined to be reshuffled out of the Treasury; elsewhere in his *Guardian* interview, he remarks that lots of people covet his job, and are "actively trying" to do it. Normally somniferously discreet, Mr Darling observes that an early reshuffle would be unwise. Combined with his prognostications of doom, the effect is to defend his shabby chancellorship from critics, rivals and possible ministerial bloodletting.

The furore over Mr Darling's comments—he also acknowledged that voters were "pissed off" with the unpersuasive government—overshadowed the little fillips for homebuyers and –owners announced on September 2nd (see article). These too, served one individual's interests especially: Mr Brown's. Widely trailed throughout the summer, they were held back in the apparent hope that a rush of goodish news would see him through the hazards of the Labour conference. Mr Darling's bid for self-preservation seems to have nobbled his boss's.

Abort! Abort! Abort!

In fact, the slight housing package was easy to overshadow. Mr Brown's team say that the schemes it contains—and further measures to help poor families with their fuel costs—are not supposed to comprise some miraculous "economic recovery plan", and do not constitute a prime-ministerial "relaunch". That is just as well: Mr Brown has almost certainly sunk too low to be relaunched, his image indelibly and unflatteringly fixed in the public mind. More radical ruses such as squeezing the rich, or wild borrowing, might well hurt the country without helping him.

In his partial defence, some argue that Mr Brown's dire standing is an inevitable result of the sinking economy: that voters always take it out on governments when they feel the pinch. But history suggests the relationship between the economy and politics is more complicated than that: the Tories, for example, won an election during a dip in 1992, then lost one during a recovery. However, the reverse seems to be true of Mr Brown's government: the political woes of the prime minister and his cabinet are shaping its erratic approach to the economy.




Repatriating refugees

Managing the right of return

Sep 4th 2008
From The Economist print edition

On paper, people who flee war and persecution have an unconditional entitlement to go back to their homeland. In reality, lots of other factors come into play

AP



THE scenes look encouraging. Since the beginning of August, hundreds of Iraqi refugees living in Egypt have gone back to their homeland on flights sponsored by the Baghdad authorities. The Iraqi government hails these returns as a sign that things are getting back to normal in a country where more than 2m people have fled abroad, and even more were internally displaced, as a result of the chaos that followed the American-led invasion of 2003.

But away from the fanfare, the feelings of the Iraqis involved in these homecomings are mixed. A few expressed mild optimism that the situation has improved in their home areas. Many more said they were returning because they had little choice: they were unable to work in Egypt and were running out of money.

Nor were they the first of Iraq's refugees to come home. Some 50,000 people re-entered the country in the nine months up to last March, the UN believes. Among these were 365 families who came back from Syria in late 2007, wooed by a resettlement offer of $800 per household. But most of that group later told the UN they could not "go home" in the literal sense; their houses had either been ruined or seized by others.

Officials of the UN High Commissioner for Refugees also say quietly that the returns from Egypt, insofar as they were prompted by near-destitution, risk violating one of the key principles of refugee law: the idea that people should not be sent back to their home country against their will. But for the UNHCR and other agencies that care for the displaced, this was only the latest of many cases where the high ideals of international law run up against the realities of power politics.

The UNHCR's founding charter is the 1951 Convention on Refugees, which spells out the entitlements of those who flee their country for fear of being killed or persecuted. The agency is also guided by the UN declaration on human rights, whose 13th article says that "everyone has the right to leave any country, including his own, and to return to his country."

In addition to those principles, many pragmatic considerations guide the actions of governments that

take in huge numbers of involuntary migrants. Even if the outside world helps, such arrivals place a huge burden on the receiving country. Refugee camps can be breeding-grounds for extremism; refugees can become political actors in their host country, and their role is often destructive.

All this can be an incentive for receiving countries to “resolve” the fate of refugees on their soil—by sending them home, by resettling them in another country or by finding the right way of integrating them. But that, of course, assumes that the receiving governments want stability. If they want to keep a conflict alive, then keeping an angry population in tents—neither able to go home, nor to settle down anywhere else—can also serve a political purpose.

Compared with Iraq, the return of refugees to another war-torn land where the West is deeply involved—Afghanistan—has been a relative success story. Over 5m Afghans have returned to their homeland since 2002, mostly from Pakistan and Iran. But 3m Afghans remain in the two neighbouring states; and when Antonio Guterres, the UNHCR chief, met the government of Pakistan (which still hosts 1.8m Afghans) last month, it was agreed that many refugees are likely to remain on Pakistani soil for years to come.

As the Afghan conflict has shown, the job of the UNHCR does not end when refugees re-enter their homeland. In the early 1990s, the agency’s approach to resettling people in their native land was little more than a “cooking-pot and a handshake”, says Jeff Crisp, a UNHCR official. Thinking (and the UNHCR’s job) broadened under Ruud Lubbers, a former Dutch prime minister, who managed in his time (2001-2005) as head of the agency to breathe new life into some old buzzwords: repatriation, reintegration and rehabilitation. Simply put, people who had fled a country because their village had been flattened would now get more help to go back and take up life where they had left off.

In Iraq and Afghanistan a mass exodus was a by-product of war, and not the conscious or main intention of the country’s leaders. Both the outside world and the leaders of Iraq and Afghanistan agree that those countries, in contrast with some other conflict zones, should continue to exist within their present borders, and that a mixture of sects and ethnicities should live in them.

Things are harder when war is triggered by an openly nationalistic project that seeks to redraw borders and change demographic balances; the most obvious, but not the sole, case of this in recent European history was the effort by Slobodan Milosevic to forge a greater Serbia.

With more consistency than has been applied in other places, the settlements imposed on Balkan war zones reflected the very opposite idea: the idea that “ethnic cleansing will not stand”, so that anybody who was forced to abandon home and property must be allowed, and helped, to go back. That looked optimistic at the time of the Dayton accords which settled the Bosnian war in 1995. Nearly half the country’s pre-war population had been uprooted; about 1m had taken refuge abroad, and as many again were internally displaced. A decade later, statistics at least suggested a great achievement. Just over 1m Bosnians had reclaimed their homes, and of these nearly half were so-called minority returns, going back to places where a rival group was dominant.

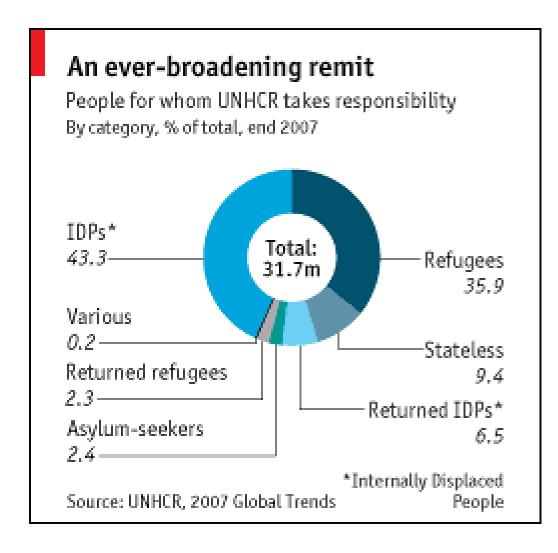
On closer inspection, however, the Bosnian record isn’t quite so spectacular. A report published last month noted that in many cases, claimed “returns” meant simply that a displaced proprietor reasserted his title and then rented out or sold his old home. And the dream of remaking mixed communities was only a partial success, says Andy Bearpark, a Briton who oversaw the Bosnian effort.

In Kosovo, too, much energy was devoted to helping the return of people displaced by war, even if they had to take the risk of coexisting with old foes. That effort got under way in August 2001, when 54 Serbs were driven at night, under heavy international guard, to an area in western Kosovo where they had once lived. But the security surrounding that operation underlined the hard truth that in Kosovo’s embittered atmosphere, recreating an ethnic mix depends on a huge policing operation; once the field is left to local players, the cycle of cleansing may restart. In all, only 18,000 “minority returns” (out of a possible total of over 100,000) are claimed for Kosovo, and many did not stay long.

As part of the price of Western recognition for their independence, Kosovo’s leaders agreed that their land should have room for non-Albanian minorities. But in reality nationalist Kosovars—like every other ethnic faction in the region—hardly hide their feeling that the fewer minorities they have to live with, the better.

That leads on to the hardest question of all for anyone concerned with refugees: is the right of return a principle on which no negotiation is possible, or is it simply one of several

considerations, on which there can be political trade-offs? To put it another way, can governments limit a right that is ascribed unconditionally to individuals—the right of displaced people to decide whether or not to return home?



Israeli officials cite the more pragmatic view to make a case against any automatic right of return for the 4.2m Palestinians—refugees from the 1948 war, and their descendants—who may in theory reclaim homes or land on the territory of Israel. UN resolution 194, voted by the General Assembly in 1948, is often quoted in support of the Palestinian right of return: it says that “refugees wishing to return to their homes and live at peace with their neighbours should be permitted to do so at the earliest practicable date.” Israelis insist that, far from proclaiming a non-negotiable principle, this language subordinates return to other considerations, such as feasibility and the intentions of the refugees.

In any case, the “right of return” has snarled all efforts to seal a final Israeli-Palestinian peace. On the Israeli side, it is claimed that anybody who asserts this right is demanding the end of the Jewish state and cannot really want peace. Ehud Olmert, the outgoing prime minister, says Israel need take no refugees back because it was not responsible for the 1948 war; Palestinians retort that many expulsions took place before that war. Conscious that a “right of return” can neither be accepted by Israelis nor ignored by Palestinians, the Bush administration has suggested that the right be exercised in a modified form: Palestinians could return to a new Palestinian state emerging out of a two-state solution, but not to Israel.

If a desire for peace really existed on all sides, that approach might possibly work—but only if it were accepted that the right of return is something to be negotiated, not simply asserted.

Cyprus

Bargaining chips, anyone?

Sep 4th 2008
From The Economist print edition

New ideas for an old quarrel

AP



Nicosia's green line: a hard crossing?

"WE MUST, at long last, put an end to the suffering of our people and reunite our country," said President Demetris Christofias on September 3rd as he began negotiations with his Turkish-Cypriot counterpart, Mehmet Ali Talat. The mood, at least, is a far cry from the rancour that engulfed the island in 2004, when a UN plan was backed by the Turkish-Cypriots but rejected by the Greeks.

One stumbling-block in all discussions about Cyprus is the fate of the Greek-Cypriots who fled south in 1974 when Turkey invaded, in the wake of a short-lived coup fomented by the junta that held sway in Athens. In Greek political rhetoric, the demand of the refugees to go home is non-negotiable. But that thinking may be changing.

Under a peace plan of 2004, some 120,000 displaced Greeks could have gone back thanks to boundary changes. But what about the 100,000 Greeks who might claim property in the Turkish part of a bi-zonal Cyprus? (The precise figure is hard to calculate; many displaced Greeks have died or moved far away, but their progeny may make claims.)

Why not combine a minimum number of returns to the Turkish zone—say 25,000—with incentives for the Turkish side to accept more? That is proposed by Neophytos Loizides, a Cypriot-born lecturer in ethnic conflict at Queen's University, Belfast. For example, for every return above the threshold, the Turkish side could "naturalise" a settler from Turkey. The bold thing about his idea is its acceptance that the Turkish side of a bi-zonal federation has legitimate interests, around which a bargain can be constructed. Obvious? Not if the rights of refugees are too sacred to negotiate.


WORLD
INTERNATIONAL

The future of aid

A scramble in Africa

Sep 4th 2008 | ACCRA
From The Economist print edition

Donors and recipients try to get to grips with the chaos in international aid

AFP



Food aid from the United States that also helps American farmers

THE development-aid business is a shambles. Privately, most of the 1,200 delegates at the grandly titled High Level Forum on Aid Effectiveness, which met this week in Accra, agreed on that. The meeting was the first big follow-up, involving 100-odd countries, international agencies and non-governmental organisations (NGOs), to an accord on making aid more effective, reached in Paris in 2005.

The main problem is not the one poor countries and NGOs usually complain about: too little aid. In fact, official development assistance has been rising modestly since the mid-1990s, in real terms and as a share of donors' national incomes.

Rather, the problem is that aid is fragmenting: there are too many agencies, financing too many small projects, using too many different procedures. "Fragmentation is the opposite of effectiveness," says Lennart Bage, head of the International Fund for Agricultural Development.

Little Eritrea, for instance, deals with 21 official and multilateral donors, each with their own projects, budgets and ways of operating. Uganda has 27. That is normal. According to the Organisation for Economic Co-operation and Development (OECD), 38 poor countries each had 25 or more official donors working in them in 2006. The number of aid projects financed by bilateral donors has skyrocketed from 10,000 to 80,000 over the past ten years.

NGOs are more numerous. Their explosive growth explains much of aid's fragmentation. The UN reckoned there were 37,000 international NGOs in 2000, a fifth of which had been formed in the 1990s. There are almost certainly more now. Ethiopia plays host to 12 affiliates from Save the Children, seven from Oxfam and six from Care International. NGOs are increasingly important to the aid business. By one estimate, they spent $27 billion of aid in 2005, compared with total official assistance of $84 billion. The Gates Foundation had a budget of $3.3 billion in 2007—more than Norway, Denmark or Australia spend.

This largesse is evidence of western generosity. But it is swamping poor countries. According to OECD figures released in Accra, donors conducted over 15,000 missions in 54 recipient countries last year. Vietnam played host to an average of three visits each working day. So did Tanzania, whose overstretched civil service produces 2,400 quarterly reports on projects a year. Health workers in several African countries say they are so busy meeting western delegates that they can only do their proper jobs—vaccinations, maternal care—in the evening.

The Paris declaration of 2005 laid down a number of principles for making aid work better, and drew up

specific targets which donors and recipients are supposed to meet by 2010. The aim of the forum which took place in Ghana was to record how much—or little—progress has been made at the halfway point.

Some of the targets are sensible and even stand a chance of being hit. It is obvious that aid should help recipient countries but that idea is forgotten when donors ring-fence their projects, using their own experts (not local people) to build, run and evaluate operations. The Paris declaration aims to cut the use of such parallel systems dramatically. Between 2005 and 2007, their number did indeed fall, by about 10% in 33 countries. But big problems remain. In Mozambique, says Oxfam, a British NGO, donors are spending a staggering $350m a year on 3,500 technical consultants, enough to hire 400,000 local civil servants. "Aid should strengthen local capacity rather than spawn parallel aid empires," says Robert Fox, Oxfam's top representative in Accra.

Fragments of the imagination

Similarly, it may seem obvious that flows of aid should be recorded, so recipients can know what they are getting, and scrutinise it. But in practice this does not happen. One can measure how much aid is recorded accurately and the share has risen from 42% in 2005 to 48% in 2007 (ie, only 48% of aid is properly accounted for). Again, an improvement, but still a far cry from the target, which is 85% accuracy.

But the biggest problem is too many aid agencies, and the challenge is co-ordinating them. In practice, national, multilateral and NGO donors probably can't do more themselves than they do anyway, so the best way of coping with the fragmentation of aid is for recipient countries to lay down a set of national development priorities and ask donors to fit in with their plans. That sounds fine in theory, but if recipients were serious about it they would be expected to be saying no to offers of aid that don't fit in with their plans. That hardly ever happens. The Paris target is for three-quarters of recipient governments to publish development programmes that aid agencies can use. Last year, according to a survey on monitoring the Paris declaration, only a fifth did. Unless that improves, aid is likely to remain badly fragmented.

Still, the picture is not all doom and gloom. One of the oldest problems bedevilling the business is the practice of "tied aid" (ie, requiring some of it be spent in the donor country). This increases inefficiency (tying is reckoned to raise the cost of aid to the recipient by 15-30%) and adds to the problem of fragmentation. So it is good news that Britain, Sweden, Ireland and the Netherlands are untying their aid and that, in Accra, the OECD revealed evidence that things are moving further in the right direction. In 2002, 43% of official aid was untied. By 2006, the no-strings-attached share had increased to 53%. A small but welcome step in changing developing countries from "projects" to "partners".

Economist.com SCIENCE TECHNOLOGY QUARTERLY

Monitor

The meek shall inherit the web

Sep 4th 2008
From The Economist print edition

Computing: In future, most new internet users will be in developing countries and will use mobile phones. Expect a wave of innovation

Illustration by Belle Mellor



THE World Wide Web Consortium (W3C), the body that leads the development of technical standards for the web, usually concerns itself with nerdy matters such as extensible mark-up languages and cascading style sheets. So the new interest group it launched in May is rather unusual. It will focus on the use of the mobile web for social development—the sort of vague concept that techie types tend to avoid, because it is more than simply a technical matter of codes and protocols. Why is the W3C interested in it?

The simple answer is that the number of mobile phones that can access the internet is growing at a phenomenal rate, especially in the developing world. In China, for example, over 73m people, or 29% of all internet users in the country, use mobile phones to get online. And the number of people doing so grew by 45% in the six months to June—far higher than the rate of access growth using laptops, according to the China Internet Network Information Centre.

This year China overtook America as the country with the largest number of internet users—currently over 250m. And China also has some 600m mobile-phone subscribers, more than any other country, so the potential for the mobile internet is enormous. Companies that stake their reputations on being at the technological forefront understand this. Last year Lee Kai-fu, Google's president in China, announced that Google was redesigning its products for a market where "most Chinese users who touch the mobile internet will have no PC at all."

It is not just China. Opera Software, a firm that makes web-browser software for mobile phones, reports rapid growth in mobile-web browsing in developing countries. The number of web pages viewed in June by the 14m users of its software was over 3 billion, a 300% increase on a year earlier. The fastest growth was in developing countries including Russia, Indonesia, India and South Africa.

Behind these statistics lies a more profound social change. A couple of years ago, a favourite example of mobile phones' impact in the developing world was that of an Indian fisherman calling different ports from his boat to get a better price for his catch. But mobile phones are increasingly being used to access more elaborate data services.

A case in point is M-PESA, a mobile-payment service introduced by Safaricom Kenya, a mobile operator, in 2007. It allows subscribers to deposit and withdraw money via Safaricom's airtime-sales agents, and send funds to each other by text message. The service is now used by around a quarter of Safaricom's 10m customers. Casual workers can be paid quickly by phone; taxi drivers can accept payment without having to carry cash around; money can be sent to friends and family in emergencies. Safaricom's parent company, Vodafone, has launched M-PESA in Tanzania and Afghanistan, and plans to introduce it in India.

Similar services have also proved popular in South Africa and the Philippines. Mobile banking is now being introduced into the Maldives, a group of islands in the Indian Ocean where many people lost their life savings, held in cash, in the tsunami of December 2004.

For the W3C, M-PESA and its ilk are harbingers of far more sophisticated services to come. If mobile banking is possible using a simple system of text messages, imagine what might be possible with full web access. But it will require standards to ensure that services and devices are compatible. Stéphane Boyera, co-chair of the new W3C interest group, says its aim is to track the social impact of the mobile web in the developing world, to ensure that the web's technical standards evolve to serve this rapidly emerging constituency.

The right approach, Mr Boyera argues, is not to create "walled gardens" of specially adapted protocols for mobile devices, but to make sure that as much as possible of the information on the web can be accessed easily on mobile phones. That is a worthy goal. But Ken Banks, the other co-chair of the W3C's new interest group and the founder of kiwanja.net, which helps non-profit organisations exploit mobile technologies in the developing world, points out that simple services based on text messages are likely to predominate for some time to come, for several reasons. All mobile phones, however cheap, can send text messages. Mobile-web access requires more sophisticated handsets and is not always supported by operators. And users know what it costs to send a text message.

As countries work their way up the development ladder, however, the situation changes in favour of full mobile-web access. Jim Lee, a manager at Nokia's Beijing office, says he was surprised to find that university students in remote regions of China were buying Nokia Nseries smart-phones, costing several months of their disposable income. Such handsets are status symbols, but there are also pragmatic reasons to buy them. With up to eight students in each dorm room, phones are often the only practical way for students to access the web for their studies. And smart-phones are expensive, but operators often provide great deals on data tariffs to attract new customers.

Xuehui Zhao, a recent graduate of the Anyang Institute of Technology in Henan province, explains that a typical monthly package for five yuan ($0.73) includes 10 megabytes of data transfer—more than enough to allow her to spend a couple of hours each day surfing the web and instant-messaging with friends. It is also much cheaper than paying 200 yuan per month for a fixed-broadband connection.

As this young generation of sophisticated mobile-web users grows up, what sort of new services will they want? Many NGOs and local governments are trying things out. Several examples were discussed at a workshop in June organised by the W3C in São Paolo, Brazil. The government of the Brazilian state of Paraná, for instance, is using text messages and voice-menu systems to notify the unemployed about job opportunities and farmers about agricultural prices.

But the workshop also highlighted the limits of what such efforts can achieve. It quickly became apparent that more or less identical services are being developed from scratch repeatedly in different parts of the world. There is clearly room for more co-ordination of such efforts, which is exactly what the W3C has in mind.

Furthermore, many clever systems are being developed by NGOs with no apparent interest in setting up commercial services. As Mr Boyera points out, this raises the issue of sustainability. What happens when the NGO's funding runs out? One conclusion from the workshop was that promoting social development through the mobile web will mean engaging with businesses. Regulators can also help by fostering cheap mobile access.

The developing world missed out on much of the excitement of the initial web revolution, the dotcom boom and Web 2.0, largely because it did not have an internet infrastructure. But developing countries

may now be poised to leapfrog the industrialised world in the era of the mobile web.

Monitor

Gas, gas, quick boys

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Chemical sensors: A new nanodevice able to detect low concentrations of chemical agents could help to thwart terrorist gas attacks

Illustration by Belle Mellor



TERRORISM is most commonly associated with the bomb and the bullet, but ever since an incident on the Tokyo subway system in 1995, the security services have also had to worry about poison gas. That attack, which used a nerve-gas called sarin, killed 12 people and severely injured another 50. Sarin is to be feared because it is invisible, odourless and 500 times more deadly than cyanide. But other gases (not least cyanide itself) could be used instead.

What is needed is a cheap way of detecting such gases and, having raised the alarm, of identifying which gas is involved so that anyone who has inhaled it can be treated. And that is what a team of chemical engineers at the Massachusetts Institute of Technology, led by Michael Strano, think they have created. Not only can their new sensor distinguish between chemical agents, it can detect them at previously unattainable concentrations—as low as 25 parts in a trillion.

The core of Dr Strano's invention, which he recently described in the journal *Angewandte Chemie*, is an array of treated carbon nanotubes. Each is, in essence, a layer of carbon atoms that has been coated with nitrogen-containing molecules called amines and rolled into a cylinder with the amines on the outside. Each tube, which is about 1/50,000 of the width of a human hair in diameter, is arranged so that it runs between pairs of tiny electrodes. When the device is switched on, the nanotubes carry a tiny electric current.

The gases to be analysed reach the nanotubes through a tiny column. As they pass along this column they tend to stick to its sides. Some gases stick more than others, and hence travel more slowly, so that the components of the gas sample separate out. Each component is puffed onto the nanotubes, and sticks to the carbon atoms. This, in turn, causes the conductivity of the nanotubes to change, by an amount characteristic of each gas.

It is here that the amines come into their own. The nitrogen atoms of amines have what chemists call a lone pair of electrons, and it is this which attaches each amine molecule to the nanotube. The lone-pair interactions change the chemical characteristics of the carbon. Normally, a gas molecule attaching itself to a nanotube would stay there. If that happened to a detector, its useful life would be short. But the amine-coated carbon is not so sticky, so the gas molecules soon detach, leaving the nanotubes clear to detect the next lot of errant gas.

Because the detector is small and requires very little power, the team hopes it will be widely used in the sort of enclosed spaces where a gas attack would be most successful. They suggest it could even fit in a policeman's pocket. If only someone could now miniaturise gas masks.

Tailpipe power

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Thermoelectric devices: Generating electricity directly from wasted heat is becoming more practical, in both vehicles and buildings

THERE is something unusual about the exhaust pipe on the test car driven by Rainer Richter, leader of a research group at BMW, a German carmaker, in Munich. The vehicle is fitted with a device to capture some of the heat normally lost via the exhaust and convert it into electricity.

AP



Time to put that heat to good use

Car engines waste a lot of heat. According to some estimates as much as 60% of the potential energy contained in petrol can be expelled or radiated as heat by an engine. Although some of this may be blown into the car to warm the occupants on a cold day, much of it is lost. This is why BMW has fitted a thermoelectric generator in the exhaust system of the test car.

The generator converts heat into electricity using the Seebeck effect, named after Thomas Johann Seebeck, a physicist who discovered in 1821 that applying a temperature difference across two adjoined metals gave rise to a small voltage. This gave rise to thermocouples—devices that are now widely used to measure temperature differences. But the effect can also be used as a generator, an idea that goes back to the 1950s, when thermogenerators were placed over kerosene lamps to power radios in remote areas that had no electricity. More recently, thermogenerators that obtain their heat from the radioactive decay of plutonium have been used in spacecraft such as the *Voyager* probes. Plutonium-powered thermogenerators have also been used to power lighthouses and radio beacons in isolated areas.

But although thermogenerators are relatively simple and require little maintenance, they are not very productive. At the temperatures found in a car engine, they convert just 6-8% of heat into electricity, says Dr Richter. Nevertheless, he is convinced that new materials will make thermoelectric generators much more effective. And to be prepared, he has started developing systems that can be built into an exhaust without affecting the performance of the engine.

The system on his test car contains a box where the hot gas is split up and fed through a series of pipes covered on the inside with lead-telluride, a thermoelectric semiconductor. The outsides of the pipes are cooled by some of the coolant circulated by the engine. It works best while driving at around 130kph (80mph), says Dr Richter. At this speed a gauge on the dashboard shows the generator is producing 150 watts—enough to light a few domestic light bulbs, but much less than the 600-700 watts of electrical power needed by a modern car.

With better thermoelectric materials that produced more electricity, however, it might become feasible to turn off a car’s alternator (the device, driven by the engine, that generates electricity) at certain times. Dr Richter thinks using thermoelectric generation in this way could reduce fuel consumption by around 5%. He hopes to see production cars using the technology by 2013.

The new materials that could make this possible are already starting to show up in research labs. For example, Joseph Heremans and his colleagues at Ohio State University recently completed a study in which they doubled the energy conversion of lead-telluride by doping it with thallium. The new material was particularly effective within the typical temperature range of a car engine.

It is not only cars that could benefit from such developments. Dr Heremans thinks there will be other applications for thermoelectric generators, anywhere heat is lost—such as in the chimneys of homes, offices or factories. They could also be used to generate electricity from stoves or open fires in the

developing world, where high-performance cars are still a rarity.

Monitor

Whirlybirds go green

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Transport: Switching to diesel engines could make helicopters, and other aircraft, more efficient and less damaging to the environment

THE ability to take off and land vertically, and to hover, makes helicopters useful machines. Unfortunately, because they lack fixed wings to help provide lift, they are also expensive to operate. Helicopters need powerful engines to drive their rotors, and that means they use a lot of fuel. So could they benefit from one of the developments being used to make car engines more efficient—a switch to diesel fuel? EADS, Europe's aerospace giant, seems to think they could. One of its subsidiaries, Eurocopter, has begun work on a diesel-powered helicopter. Makers of fixed-wing aircraft are also looking at diesel engines, in small planes at least, where they show promise as a serious alternative to standard piston engines, which run on a high-octane form of petrol.

The first diesel-powered aircraft, a modified Stinson, took to the air in 1928. But even though diesels were tried out in airships and some early Junkers bombers, they never really caught on. Their chief drawback was their weight. Both of a diesel's big advantages on the ground—its efficiency and its torque (pulling power)—are the result of its high compression of the fuel-air mixture in its cylinders. The resulting high pressure, however, requires a big, heavy engine to contain it. That is why diesels have traditionally been used mostly in heavy machines, such as locomotives and lorries.

Now the weight penalty is starting to diminish. New casting and manufacturing methods can produce lighter, stronger components. Computerised fuel-injection has improved diesels' performance, and their inherent strength means they can be turbocharged to boost power even further. As a result, many of the least thirsty cars now on the road have diesel engines. And these same advances are being exploited in a new generation of diesel engines for use in small fixed-wing aircraft.

Diamond Aircraft, an Austrian firm, is making a diesel-powered light aircraft which it says uses just 17 litres of fuel an hour, instead of the 35 litres that a similarly sized plane with a traditional piston engine would consume. General Atomics, a Californian company, has performed a similar trick. It has begun supplying diesel-powered versions of its Predator unmanned aerial vehicle, known as Sky Warrior, to American forces in Iraq and Afghanistan. The Sky Warrior is intended for long-range reconnaissance missions, rather than as a weapons platform.

Eurocopter, meanwhile, has proposed fitting an advanced, turbo-charged diesel engine into one of its EC120 helicopters. Normally this aircraft, like many commercial helicopters, is powered by a jet-turbine engine that runs on kerosene. (Only the smallest helicopters still use piston engines.) Guillaume Faury, Eurocopter's engineering chief, hopes to have a prototype diesel EC120 flying by 2012. If it works well enough, the company might build a twin-engined version, too.

Eurocopter calculates that although an unloaded diesel EC120 would still be heavier than a jet-turbine version, it would use less fuel per kilogram lifted. This would not bring much benefit on short flights, but on longer ones (say, two or three hours) the weight of the extra fuel needed for the jet turbine would compensate for the inherent heaviness of the diesel engine, meaning that the diesel would offer significant fuel savings. That would make diesel helicopters ideal for missions such as search and rescue, and border patrols. For the whirlybirds at least, this would be less thirsty work.

Economist.com SCIENCE TECHNOLOGY QUARTERLY

Monitor

Liquid logic

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Computing: Liquid cooling could improve the performance of computers, allow waste heat to be recycled and make solar cells more efficient

Illustration by Belle Mellor



READERS of a certain age may remember that Volkswagen Beetles once had air-cooled engines. That made for simplicity. But, eventually, increasing power meant that even VW conceded the point and started to cool its engines with water.

Something similar is happening with computer chips. Each flipping of a “one” to a “zero”, or vice versa, generates heat—and the flipping is happening so fast that if nothing is done, the processors in some high-powered computers will soon start melting. Moreover, the trend is to stack chips on top of one another, to improve communications between them. But this makes shedding the heat even harder, because of the falling ratio of the processor’s surface area (through which heat can escape) to its volume (the amount of material generating heat).

According to Thomas Brunschwiler, a researcher at IBM’s laboratory in Zurich, when you build processors in this way you generate heat at about two kilowatts per cubic centimetre—more intensely than in a nuclear reactor and ten times more than in any other man-made device. That would destroy an uncooled chip within a fraction of a second.

Water, however, can absorb 4,000 times as much heat as air, for a given rise in temperature. Mr Brunschwiler and his colleagues have therefore been experimenting with water-cooling of stacked chips. They have developed a stacked processor permeated by a network of channels. These channels, which have a diameter of 50 microns (about the width of a human hair) are etched using standard silicon-fabrication methods. They enable water to be pumped in a network that runs between the horizontal layers of a stack and the thousands of vertical interconnections that carry information between its layers. The water absorbs the heat and carries it away.

That, in the prototypes at least, is enough to keep the chips from melting. But in these days of environmental awareness, not to mention high energy prices, it seems a waste simply to throw the heat thus collected into the atmosphere. If chips are as hot as power stations, the thinking goes, why not use them as such?

In practice, not enough heat is generated to make a useful amount of electricity. But heat is useful in its own right. It might, for instance, be used to warm buildings. The Zurich laboratory has already constructed a prototype that feeds the water from the chips into a heat-exchanger. The next stage is to link this exchanger to a district-heating system so that it can be pumped into central heating. Bruno Michel, manager of advanced thermal packaging at the laboratory, reckons the heat from a medium-sized data centre—one consuming a megawatt of power—would be enough to warm about 70 houses within a range of 3km. IBM hopes to build such a centre within five years.

If it works, the potential could be huge. At the moment, the world's data centres are estimated to consume about 14 gigawatts of power, and to be responsible for 2% of global carbon-dioxide emissions—roughly the same as air traffic.

Water-cooling of this sort could also make a more direct contribution to the reduction of greenhouse-gas emissions, by promoting the use of solar energy. Solar cells are also made of silicon, and the latest fashion is to concentrate sunlight on them using mirrors. That means you need less silicon to make a given amount of electricity, but it also makes the silicon very hot—as hot, in fact, as a high-performance microprocessor.

By cooling such devices with liquids, IBM reckons it can increase the amount of sunlight that can be focused on them without destroying them, thus increasing the amount of electrical energy they produce. Supratik Guha, a researcher at IBM's Thomas J. Watson Research Centre in Yorktown Heights, New York, has found that he can concentrate 2,300 times as much sunlight on a cell as nature normally provides, while maintaining that cell at a (relatively) cool 85°C. Without the cooling system, its temperature would rapidly exceed 1,500°C, causing it to melt. With cooling, the cells can manage an output of 70 watts a square centimetre—a record, according to IBM, and a demonstration that plumbing, too, can be a high-tech form of engineering.

Monitor

The computer says no

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From The Economist print edition

Computing: Image-processing software could help to identify artists by their characteristic brushstrokes—and spot forgeries

THE ability of computers to analyse complex digital images is growing rapidly. Robots are being fitted with powerful vision systems that enable them to recognise and hold things. Computers can scan satellite images of the Earth for tiny features, or search pictures from deep space for strange objects. They can analyse medical images to find out what might be going on inside a human body. Now digital imaging is starting to figure out how to spot art forgeries, too.

Science has long been used to help authenticate works of art. Technicians can date paint from its chemical composition, for example, or x-ray a canvas to reveal what lies below the surface. In recent years, however, the art itself has come under more scientific scrutiny, especially through the analysis of brushstrokes. The idea is to establish an artist's "handwriting" to help experts attribute paintings.

Vincent Van Gogh Foundation



Whodunnit?

One of the most comprehensive studies using such methods was published recently in *Signal Processing Magazine*, published by the Institute of Electrical and Electronics Engineers. James Wang of Penn State University and his colleagues from other universities analysed the paintings of Vincent van Gogh, with the assistance of the Van Gogh and Kröller-Müller museums in the Netherlands.

The researchers used high-resolution images, made in shades of grey, of 101 paintings which were either by Van Gogh or in his style. Of these, 82 have consistently been attributed to the Dutch painter, and a further six are known to have been painted by others. (Experts cannot agree who painted the remaining 13 pictures.)

From these paintings, 23 were selected because they were known unquestionably to be by Van Gogh and because they represented different periods of his life, during which his style changed. These paintings were used to "train" computers running image-analysis software about how the artist painted. Scans of small areas of the paintings were taken for individual analysis, so the software could identify the recurrent use of certain brushstroke patterns and other features. The resulting data were used to build a mathematical model of Van Gogh's style against which the other paintings could tested.

The model had some success. For instance, when two known Van Goghs, "The Plough and the Harrow" and "Wheatfield with Crows", were used for training, the system indicated that among the paintings that closely resembled them was "The Sea at Saintes-Maries", a fake commissioned or sold by Otto Wacker, a German art dealer. But when the image analysis was repeated at a greater level of detail, the Wacker forgery was shown to be different. Ultimately the software correctly identified four of the six paintings known not to be by Van Gogh, though it also classified two of his works as having been painted by someone else.

The researchers describe their results so far as "encouraging, but not perfect". Computerised image-processing systems should get better at detecting forgeries as they are trained to recognise further aspects of artists' styles, says Dr Wang. He and his colleagues are now using images taken at other wavelengths, including ultraviolet, to analyse different aspects of Van Gogh's brushwork.

Interest has been shown in using image analysis to help find forgeries of other artists. The bigger the

body of an artist’s known work, the more accurate the system should be, because it will have more examples to learn from. But however good computers get at classifying paintings, they are likely to remain only one of the tools used to detect forgeries. Although the researchers are certain that technology can provide some answers to riddles about whose hand was responsible for a particular work, they also concede that human experts will have the final say.

Following the crowd

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From The Economist print edition

The internet: The idea of "crowdsourcing", or asking crowds of internet users for ideas, is being tried out in some unusual quarters

WHEN the British government established the Longitude prize in 1714, offering a cash prize for a simple and practical way to determine the position of ships at sea, it was ahead of its time. Rather than funding a single research scientist to solve the problem, it adopted an approach that has lately become known as "crowdsourcing". Jeff Howe, who coined the term in an article in *Wired* in 2006, defined it as "the act of taking a job traditionally performed by a designated agent (usually an employee) and outsourcing it to an undefined, generally large group of people in the form of an open call."

As the Longitude prize shows, the idea is not new. But it has been given new power by the internet, which makes it cheap and easy to apply the crowdsourcing approach in all sorts of unexpected areas. The compilation of Wikipedia, an online encyclopedia written and edited by its users, is the best-known example, but there are many others. The Library of Congress asked users of Flickr, a popular photo-sharing site, to identify unknown people in its old photo collections. Within days, distant relatives and acquaintances had identified hundreds of people in the pictures. Volunteers have helped astronomers sort millions of galaxies in the "Galaxy Zoo" project, in which participants are asked to classify images of galaxies, captured using telescopes, into one of a handful of categories. (This is something that software is bad at, but humans find easy.)

Crowdsourcing has also spread into some unexpected areas. It has, for example, been embraced by political activists. In 2007 Tunisian activists launched a campaign to crowdsource the mapping of flights taken by the presidential plane, using images sent in by volunteers from European airports, with the results mapped using Google Earth. They quickly found out that their president—or at least his plane—travels far more than is publicly acknowledged. And "Wanted for War Crimes", a website put together by Aegis Trust, an anti-genocide campaign group, lets users report sightings of war criminals implicated in the Darfur conflict and mark them on Google Maps.

Companies are also beginning to take notice. Google is sending satellite-positioning devices to India and enlisting volunteers to chart the country's roads on Google Maps. And a survey of marketing bosses conducted by the Marketing Executives Networking Group found that 62% have used crowdsourcing in some form. This makes sense: asking the public for ideas is much cheaper than hiring consultants or doing market research.

It also allows organisations to claim that they are listening to what people want. Last year KJG, a Catholic youth organisation in Cologne, launched a website where young people are encouraged to submit ideas for what they want to change at the Catholic church. Similarly, the British government's "Show Us a Better Way" invites suggestions on how to make better use of public information. Ideas submitted range from visualising the locations of shipwrecks to a system to locate car parks, ranked according to cost and crime rates. A cash prize is offered not for the ideas themselves, but for the best implementation of one of them.

Is there nothing that cannot be crowdsourced? In fact, as the idea spreads, its limitations are becoming apparent. Once the initial excitement fades, some firms are realising that crowdsourcing can be more expensive than doing things themselves. Ask the internet crowds for a new product design, for example, and you may find that submissions have also been sent to rival firms, or have been stolen from elsewhere. Checking that submissions do not infringe copyright can be a nightmare; simply designing things in-house can be the cheaper and safer option.

There are other reasons why crowdsourcing and commerce make uneasy bedfellows. Most crowdsourcing projects rely on volunteers, and people are much less willing to volunteer if they feel someone else is

profiting from their hard work. Wikipedia's success may have much to do with the fact that it is run by a non-profit organisation. A commercial version of it would probably have to find a way to reward contributors.

And even those companies that do try to share the proceeds from commercial crowdsourcing are not safe. A pioneer of for-profit crowdsourcing was Cambrian House, a company based in Calgary that encouraged people to send in ideas for new software products, had the community evaluate them, and then funded the winners. It sounded like a great idea, but the company sold its assets in May and its chief executive acknowledged that its business model had failed. Perhaps it should have crowdsourced the management of the company, too?

Monitor

I, human

Sep 4th 2008
From The Economist print edition

Robotics: They are staples of science fiction. And it seems that humanoid robots may make people feel more at ease than other designs

Illustration by Belle Mellor



PEOPLE commonly attach names to machines, from cars to PCs, especially if they use them regularly. Robots are proving no exception. Floor-cleaning robots get named, as do the bomb-defusal robots that have been deployed in Afghanistan and Iraq. And when they break down or get blown up, their users have even been known to mourn.

Robots are getting more capable in leaps and bounds. Some now have visual systems that combine digital cameras with image-processing software to allow them to work out what they are looking at, and decide what to do next. The robotic rovers sent to Mars are able to plot their own courses around rocks in order to reach a specified destination, for example. Robotic manipulators are also becoming more dexterous—precise enough, indeed, with the use of new touch-feedback systems, to perform brain surgery. All of which suggests that general-purpose service robots could soon be stepping out of development laboratories and into people's homes. No doubt these machines, too, will be named, and some could be treated like members of the family. But does that mean robots should also look like the relatives?

At the moment, robot developers fall into two camps. There are those trying to make their machines as anthropomorphic as possible, even though that tends to complicate things. Honda's ASIMO, for instance, walks, talks and looks like a child in a space suit. At the other extreme is Care-O-bot, developed by the Fraunhofer Institute for Manufacturing Engineering in Stuttgart. The institute's engineers have deliberately taken a different tack from those at Honda in order to come up with a service robot that is easier to make, even though it looks like a one-armed Dalek that has had a tummy-tuck. But now another group of researchers, also from Germany, has suggested that the Japanese approach is the better one.

The study, published in the *Public Library of Science*, was led by Soren Krach and Tilo Kircher of the Clinic for Psychiatry and Psychotherapy at Aachen University. They used a scanning technique, called functional magnetic-resonance imaging, to find out how people's brains respond to various sorts of robots.

The researchers gave a group of volunteers some laptop computers and asked them to play a simple "prisoner's dilemma" game against four different opponents, also armed with laptops. The first opponent was a laptop on its own; the second a laptop in which the keys were pressed by a pair of robotic hands without a body; the third opponent was a humanoid robot (known as BARTHOC Jnr and developed at Bielefeld University) and the fourth was a real human.

The participants were introduced to their opponents in a trial game, and then went into the scanner believing they were still connected to the same opponent via a pair of video goggles and a control box. They then played a series of games with each opponent as their brains were monitored. But they were not actually playing the opponents they had just seen. Instead, they were fed a random series of responses to their moves.

Dr Krach and Dr Kircher chose the "prisoner's dilemma" game because it involves a difficult choice: whether to co-operate with the other player or betray him. Co-operation brings the best outcome, but

trying to co-operate when the other player betrays you brings the worst. The tendency is for both sides to choose betrayal (thus obtaining an intermediate result) unless a high level of trust exists between them. The game thus requires each player to try to get into the mind of the other, in order to predict what he might do. This sort of thinking tends to increase activity in parts of the brain called the medial prefrontal cortex and the right temporo-parietal junction.

The scanner showed that the more human-like the supposed opponent, the more such neural activity increased. A questionnaire also revealed that the volunteers enjoyed the games most when they played human-like opponents, whom they perceived to be more intelligent. Dr Krach and Dr Kircher reckon this shows that the less human-like a robot is in its appearance, the less it will be treated as if it were human. That may mean it will be trusted less—and might therefore not sell as well as a humanoid design.

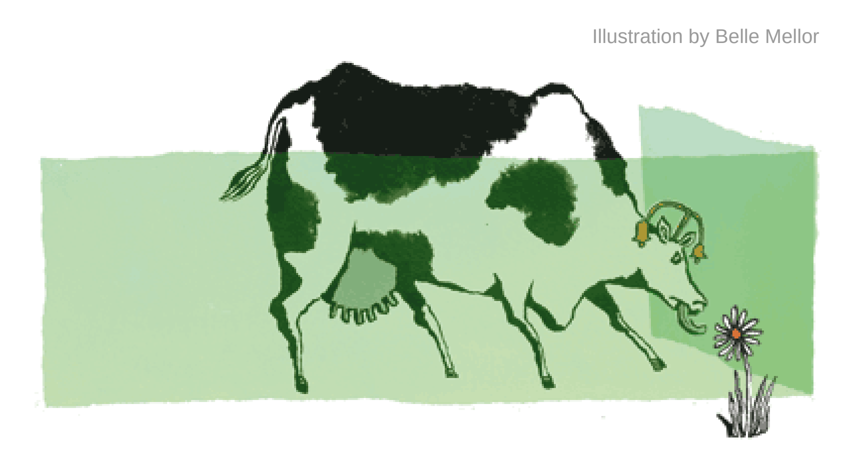
But perhaps appearance is not everything. C-3PO might make a better butler, but most “Star Wars” fans would probably prefer to trust their lives to R2-D2.

Monitor

Virtual fencing

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Illustration by Belle Mellor



Electronics: A new way of corralling cattle, using satellite-tracking and warning signals rather than fences, is being tested in New Mexico

BUILDING and maintaining the fences needed to control livestock is an expensive and time-consuming business. The materials alone can cost more than $20,000 a kilometre. On top of that, there is the cost of repairing damage caused by wild animals and falling trees. And then there is the need to move some fences around, a bit at a time, so that grazing land can be used efficiently. Strange as it may seem, many ranchers would therefore like to get rid of fences—if they could.

According to Dean Anderson, an animal scientist at America's Department of Agriculture, and Daniela Rus, a computer scientist at the Massachusetts Institute of Technology, the answer is to move from real fencing to the virtual sort. The idea of virtual fencing is not entirely new. Pet "containment" systems, such as collars that give dogs a small electric shock if they roam outside a particular area, have been around since the early 1970s. But attempts to come up with a system for controlling free-ranging animals have failed.

Dr Anderson and Dr Rus started from the observation that the job of a fence is merely to regulate an animal's behaviour and asked if there was another way of achieving the same end. The result is a device dubbed the Ear-a-round, which acts both as a sensor of what an animal is up to and as a discipline on animals that are not behaving as their owner wishes.

The Ear-a-round consists of a small, light box that sits on top of a cow's head, and a pair of earpieces made of fabric and plastic. The box contains a small computer, a GPS satellite-tracking device and a transceiver that enables it to be programmed remotely. The earpieces both keep the box upright and deliver commands—either sounds or electric shocks—to the animal wearing the device. The whole thing is powered by lithium-ion batteries topped up by solar cells.

The range that an animal is allowed to occupy is encoded using GPS co-ordinates. The GPS system determines the animal's location, and an accelerometer and a compass housed inside the box track its rate and direction of travel. If an animal roams beyond the range specified, the device responds in a way determined by its wearer's recent behaviour. The algorithms devised by Dr Rus are able to work out, based on past experience, how strong the message to turn back needs to be.

Minor transgressions lead to quiet sonic alerts or mild tingles; major ones to shouts or shocks. In both cases the cue is delivered to the ear opposite the direction that the animal is being nudged towards. Four years of research at a ranch in New Mexico have shown that cattle quickly cotton on to what they need to do.

Is all this really cheaper than fencing? At $600 a cow, not yet. But Dr Rus is working to get the price of the hardware down to the $100 that farmers will pay. Meanwhile Dr Anderson is about to start investigating how many cows actually need to be fitted with Ear-a-rounds to control an entire herd. He hopes that, by identifying a herd's leaders and equipping them alone, this number can be reduced to a handful.

Not all the stimuli used to guide the animals are unpleasant—at least, not intentionally so. In April Dr Anderson set out to test whether a recording of him singing the "gathering songs" used during traditional round-ups would be as effective at herding cattle as irritating sounds such as barking dogs, or electric shocks. Four Brangus cows listened to recordings of him chirping "Come on, girls" at 30-second intervals. Almost immediately, he says, the herd began moving towards the corral. It is not clear whether they were encouraged by his singing, or were trying to get away from it.

Armchair archaeology

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From The Economist print edition

Computing: Archaeologists are using free satellite imagery from Google Earth to make discoveries, develop theories and plan expeditions

Google Earth



INDIANA JONES, it is fair to say, would not approve. A small band of archaeologists are using Google Earth to make discoveries without getting their hands dirty. Although archaeologists have used satellite imagery for decades, the technique remained out of reach of most researchers because of the prohibitive costs and specialist skills needed to rectify distortions in raw satellite images caused by the angle of capture. But Google Earth, a free program that can be downloaded from the internet giant's website, makes high-quality satellite images of much of the world's surface available to anyone with a broadband connection. Archaeologists are now embracing the technology.

David Thomas, a graduate student at La Trobe University in Melbourne, Australia, belongs to a team that launched a project called Archaeological Sites of Afghanistan in Google Earth (ASAGE) last year after plans for a survey near the Minaret of Jam had to be abandoned because of the continuing conflict in the region. He and his colleagues decided that making discoveries using computer mice, rather than shovels and trowels, would have to do instead.

"Realistically it is not possible for a Western field archaeologist to work in that area, and I can't imagine it will be for the next 20 years," says Mr Thomas. But, he says, studying images from Google Earth (pictured) "has the potential to enrich significantly our knowledge of Afghanistan's archaeological remains, particularly in areas that are too large, dangerous or remote to survey from the ground."

One aspect of the ASAGE project involved the use of high-resolution satellite images to catalogue the details of 463 previously unknown sites in the Registan desert, including mounds known as tepes (the remains of ancient settlements), hand-dug water channels and abandoned dams and reservoirs.

Little is known about the ancient history of the region, but nearby river valleys have been occupied for centuries, if not millennia. The Ghaznavids, who ruled over a large central Asian empire between the late 10th and 12th centuries, built intricate irrigation systems and established palaces, mosques and walled gardens at their winter capital of Bust and the surrounding settlements of Lashkari Bazar, on the east bank of the Helmand river.

Mr Thomas's team, who displayed their results at the World Archaeological Congress in Dublin in July, produced plans of sites such as the medieval Islamic fort of Qal'a-i Hauz, believed to be a winter dwelling used by the Ghaznavid elite. The satellite images show evidence of structures that may have been hides used to hunt gazelle, and raised features that were probably used to manage water supplies. Basic plans of Bust were produced by French archaeologists in the 1970s, but the ASAGE researchers have compiled a

more detailed plan showing the positions of residences, canals and walled gardens. They hope that providing details of their findings to Afghan archaeologists will enable them to protect some of the sites.

Although Google Earth can help make discoveries remotely in this way, other archaeologists are using it in the planning stages of their work, to identify places that warrant further investigation on the ground. Nico Tripcevich of the University of California, Berkeley, used the software to help with his research into the quarrying and trade of obsidian, a kind of volcanic rock used by pre-Hispanic peoples to make tools, weapons and decorative objects as early as 10,000 years ago. He used Google Earth to find tracks used to carry the rock, probably in llama caravans, away from a quarry site at Colca Canyon, at an altitude of 4,600 metres, in southern Peru. Linear features, such as Inca walls and roads, are easy to spot because they cut across natural features.

Mapping these routes has helped archaeologists reconstruct production and trade patterns, and hence economic, social and political relations in the region in the thousands of years before Europeans arrived. “Working at high altitude is exhausting, and you want to have a good idea of where you’re going to go before you set out,” says Dr Tripcevich. “Google Earth helps you make a short list of places to investigate.”

Jason Ur, an anthropologist at Harvard University, is using the software as part of his investigation of Tell Brak, a site in north-east Syria. It was one of the largest urban sites in northern Mesopotamia and is believed to have been settled as early as 6,000 BC. Dr Ur is using Google Earth to identify tracks and other linear features running away from Tell Brak, as part of his research into the mechanism of Mesopotamian city-formation.

“Google Earth gives you free access to imagery that would otherwise cost a fortune, and require specialist training to make use of,” says Dr Ur. And being able to pan and zoom the satellite images quickly makes it much easier to spot archaeological features and relate them to each other. “If you were to press your nose against an Impressionist painting, you would see colour and maybe elements of form, but it’s not until you pull back that these would turn into a bridge or water lilies,” he says.

But Dr Ur and others are aware that there could also be a dark side to Google Earth’s archaeological potential: looters could also use the software to find promising targets. “We cannot assume that all users who seek out archaeological sites are doing so out of a positive interest in antiquity,” says Dr Ur. So archaeologists should be careful about giving out precise co-ordinates, he says. “In the cases of unexcavated sites, the archaeologist’s mission might be to give the public a general idea of the extent of ancient settlement, without handing out a road-map that could be abused by looters.”



Moving pictures

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Consumer electronics: High-definition video cameras are getting cheaper, but sometimes it is better to keep things simple

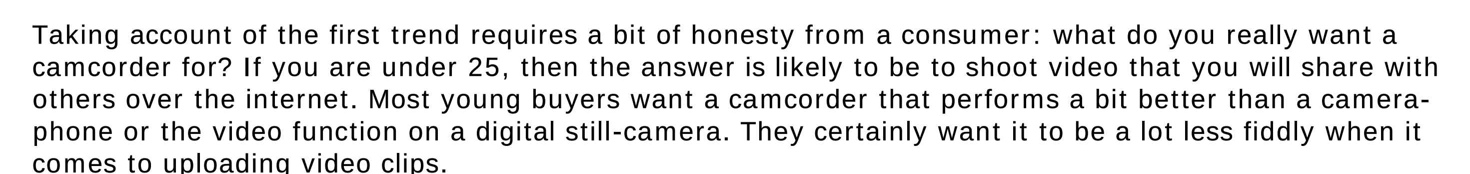
Pure Digital



A SURE way to discover how easy it is to use a consumer-electronics product is to give it to an eight-year-old, point out where the power switch is, and then stand back and see what happens. The Flip video camera (pictured left) passes this test with ease. And with bigger kids strapping it onto bikes, flying it in model aeroplanes and taking it to rock concerts, the results are impressive. But whether it is right for you depends on a number of other factors.

The Flip's simplicity has made it a huge success in America, where more than 1m have been sold. Made by Pure Digital, a company based in San Francisco, the Flip has recently gone on sale in other countries, too. In Britain it costs £100 ($187). The Flip encapsulates two trends in home video. The first involves the way people are using camcorders: nowadays they are more likely to film a short clip and post it on YouTube or Facebook than to produce an epic account of a family holiday and show it to friends on a large-screen TV.

The second trend is that digital camcorders increasingly store video using "solid state" memory, rather than recording it onto a physical medium such as magnetic tape or burning it directly to DVD. Like digital still-cameras and portable music-players, the latest camcorders store their footage on internal flash-memories, plug-in memory cards or tiny built-in hard disks.



Taking account of the first trend requires a bit of honesty from a consumer: what do you really want a camcorder for? If you are under 25, then the answer is likely to be to shoot video that you will share with others over the internet. Most young buyers want a camcorder that performs a bit better than a camera-phone or the video function on a digital still-camera. They certainly want it to be a lot less fiddly when it comes to uploading video clips.

On that score, the Flip performs admirably. With a built-in USB plug which flips out, it can plug into any Windows or Mac computer to transfer clips. The software for this is stored on the camcorder, so there are no tricky programs to install. Like the camera itself, the software is simple to use. Just a few clicks send a video directly to YouTube or to a friend. You can trim clips and or even compile a short movie—though that feature is unavailable on a Mac.

The Flip, which is not much bigger than some phone handsets, can store about an hour of video in its internal flash-memory before clips need to be deleted to make more space. The camcorder has its own small screen for playback, on which its video looks good. The quality of clips, captured at a resolution of 640 by 480 pixels, is fine for e-mail and social-networking sites, but not for a television screen.

Zooming in

The Flip's editing limitations can be overcome with third-party software. But that starts to take users in another direction. On a Mac you have to spend $30 (or £20) to upgrade to QuickTime Pro to convert the Flip's video clips into a format that iMovie, the Mac's video-editing program, will recognise. And the edited results, though good enough for the web, fall short of what you need to burn a reasonable DVD. For that,

a better camera is needed.

There are more and more small digital camcorders to choose from. Sony's HDR-TG3 (pictured below), for instance, is not much bigger than a Flip and is slim enough to slip into a jacket pocket. It is also rugged, with a body made from titanium. The camcorder can shoot high-definition video at 1,920 by 1,080 pixels, and do a lot of other tricks, including something called "Intelligent Face Detection", which automatically identifies human subjects so that their faces can be recorded in more detail.

Sony



Sony's camcorder stores its clips on Sony's version of a memory card, the Memory Stick. This means the cards can be changed when one of them fills up, which—with enough cards—allows for unlimited shooting. Even though such high-quality video results in very large files, Memory Sticks are now available in capacities as large as 16 gigabytes (GB). Depending on the settings, that is enough for several hours of filming. But all this comes at a price: the HDR-TG3 costs around $1,000.

Panasonic also makes a high-definition camcorder, the HDC-SD100, which uses three CCD sensors, as professional video-cameras do. It records onto standard SD memory cards, which are now available with up to 32GB of capacity—enough for around 12 hours of filming. Another version of the camera allows recording onto either an SD card or an internal 60GB hard drive. Using both gives about 35 hours of high-definition video.

These camcorders, and others, can record hours and hours of high-quality video. But imagine uploading all that to YouTube. The videos would need heavy editing and compression, reducing their quality. And that is assuming that the user has a computer and software that is powerful enough to handle such high-quality video without grinding to halt.

For home movies, the latest high-definition camcorders are extremely powerful machines. And storing video on flash-memories and hard drives may also provide a longer shelf-life than videotape or even DVDs. (No one is really sure about the longevity of those more traditional storage media, and a lot depends on how they are stored.) The more immediate question is: having shot all that video and edited it, is anyone going to bother to watch it? If the honest answer is no, then something simple and easy like the Flip is perhaps all that is needed. And if YouTube is still around in another century, then your video clips may be as well.

Economist.com SCIENCE TECHNOLOGY QUARTERLY

Camouflage

How to disappear

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Illustration by Derek Bacon



Military technology: Advances in camouflage, concealment and deception are revolutionising an age-old art of warfare

AS A special-forces agent in the French Navy, Michel Malalo has clandestinely entered several African countries by sea to extract endangered French nationals. Almost all the enemy fighters he encountered carried the AK-47, a widely used assault rifle renowned for its rugged reliability. But the AK-47 has a serious drawback: glint, which gave Mr Malalo an advantage in firefights. Made with steel, the AK-47 reflects light. "It's flashy—and from afar," says Mr Malalo, who took advantage of glint giveaways when shooting at the enemy. Mr Malalo, who left the special forces uninjured six years ago, says the French assault rifle, the Famas, is superbly non-reflective even in bright light.

Developing new metal alloys to reduce rifle glint is just one facet of the effort to develop better camouflage, concealment and deception technologies that is under way at defence contractors, military research bodies and university laboratories. Most of this research is being conducted in America and Europe. Much is classified. The results are often remarkable.

Even the most common form of camouflage—the coloured patterns printed onto combat fatigues—is being given a high-tech twist, as designers work with new software that incorporates neuroscientists' understanding of human vision. Pattern-generation software analyses a large number of photographs of a given theatre of operations. By crunching meteorological data on typical lighting and visibility conditions, combined with information about the colours and predominance of shapes visible in cities, fields and wilderness areas, the software proposes new, improved patterns. "It really does get technical," says Réjean Duchesneau, a lieutenant-colonel with NATO in Casteau, Belgium, who helped design a Canadian camouflage pattern called CADPAT.

Some camouflage designers, including those at America's Army Research Laboratory, also study the reflective and light-absorbing properties of materials common to an area, such as sand, cement and foliage. As well as being used by the camouflage-generation software, this information is used to manufacture fabric inks with the desired optical properties. Similar software optimises colours and patterns for vehicles and aircraft. The ability to customise camouflage for particular theatres has increased the use of temporary camouflage, which is painted on hardware before missions and washed off afterwards.

For decades most fatigues, now referred to as battledress uniforms, incorporated wiggly patterns of solid

colours known as tiger stripes. But research in the field of “clutter metrics”—the study of how well observers locate and identify objects—has recently discredited tiger stripes. With the help of eye-tracking devices that follow iris movements to determine where subjects are looking, researchers have determined that fabrics with small squares of colour, known as pixels, are harder to see. These new pixel patterns are now worn by many Western armies, including those of the United States, Britain, Canada, France and Germany. Canada has improved its camouflage so much in recent years that to spot soldiers in some conditions, observers must be 40% closer than they would have to have been in 2000.

“Adaptive” camouflage that changes rapidly in response to the environment is also in the works. TNO, a Dutch defence contractor based in Soesterberg, is using thin, textile-like plastic sheets embedded with light-emitting diodes (LEDs). A small camera scans the environment, and the colours and patterns displayed on the sheet are changed accordingly. The material is not yet flexible enough to be worn comfortably by soldiers, but it is being tested in Afghanistan with Saab Barracuda, a Swedish maker of camouflage equipment.

Pieter Jacobs, TNO’s chief technologist, says the defence ministries of Canada, Germany and the Netherlands, which have funded the development of the technology, consider such “chameleon” sheeting to be an urgent requirement. Maarten Hogervorst, a vision neuroscientist at TNO, says its performance is formidable. A tank draped with the sheeting and parked in front of a grassy slope displays an image of grass on its exposed side, for example.

Another kind of adaptive camouflage is based on flexible plastic decals. A small camera, powered by a solar cell, senses the colours and patterns of the surroundings. The surface of the decal is a crude computer display which then replicates these colours and patterns. The US Army wants to use this approach to wrap artillery and munitions containers. Daniel Watts, who leads the project at the New Jersey Institute of Technology (NJIT), says it works well but is still too expensive for battlefield use.

Some like it hot

Concealing things on the battlefield does not just mean hiding them visually. A lot of research is also being done to reduce thermal signatures, too. Infra-red and thermal-vision equipment can reveal a soldier’s heat signature at a large distance. Such equipment is becoming less expensive and is now so readily available that the Taliban in Afghanistan are well equipped with it—unlike a few years ago, says Hans Kariis, a senior technologist at the Swedish Defence Research Agency, a government body in Stockholm.

Fabrics designed to block human heat-signatures are improving rapidly. John Roos, a retired US Army colonel in Newport News, Virginia, recently observed a night-time test of an infra-red “stealth” poncho developed by AAE, a small defence contractor based in Fullerton, California. It was the most impressive infra-red protection he had seen. The man disappeared like “a black void”, Mr Roos says. (The head of AAE, Rashid Zeineh, declined to discuss the fabric’s composition.)

America’s existing heat-blocking garments already provide a remarkable combat advantage, says Mr Roos. They are similar, but inferior, to the AAE stealth poncho, he says. During some night operations, American soldiers may be heard approaching while remaining concealed in the dark. “You can imagine what that would do to enemy morale,” Mr Roos says.

One way to block body-heat signatures is to use particles called cenospheres—tiny hollow spheres of aluminium and silica that can be woven into fabrics. A leader in the field, Ceno Technologies, in Buffalo, New York, is developing a cenosphere body-paint for the face and hands which does not block necessary perspiration. Britain’s Ministry of Defence is testing it.

Researchers at the NJIT, meanwhile, have developed insulating decals that can be applied to hot objects—even firing artillery cannons—to mask their heat signatures. Even if the heat signature cannot be concealed entirely, decals can be placed so that they alter the signature’s shape. Mr Watts says his team has been successful in partially insulating tanks so that observers with night vision see the shape of a car.

Illustration by Derek Bacon

This is a useful trick, because entirely eliminating a vehicle’s heat-signature can be extremely difficult. Intermat, a Greek supplier of concealment materials to defence contractors including British Aerospace, Lockheed Martin and Thales, produces a foam coating that also smothers heat signatures. Bill Filis of Intermat says that selectively applying a one-centimetre layer of heat-insulating foam can make an armoured personnel-

carrier resemble a motorcycle when viewed through thermal-vision goggles. “Make him wonder, and this buys you time,” Mr Filis says.



Some thermal coatings are as thin as a coat of paint, so they can be applied to aircraft. But warplanes present an additional problem. When flying high to avoid anti-aircraft fire, white condensation trails, or “contrails”, can form “a giant arrow in the sky pointing to where the plane is,” says Charles Kolb, chief executive of Aerodyne Research in Billerica, Massachusetts. Researchers at the firm, which is a contractor to America’s air force, are examining the thermodynamic processes that lead to the formation of contrails, in the hope of reducing them using chemical additives.

Even as people, weapons and vehicles become harder to spot, however, new detection technologies are also being developed. In the spring of 1999 NATO warplanes flew more than 38,000 sorties over Serbia, in a bombing campaign that succeeded in pushing Serbian forces out of Kosovo. But surprisingly little damage was done to Serbian materiel. Duped NATO pilots had destroyed dummy tanks, artillery and other items of military hardware made out of wood and tarpaulins. Much of Serbia’s real military kit was hidden safely under foliage, which interferes with standard radar.

Engineers at Lockheed Martin, a large American defence contractor, have designed a radar system called FOPEN, short for foliage penetration. It became operational in 2005, but still requires further development and is deployed on just one active American warplane so far. But Lockheed Martin’s FOPEN programme manager, Robert Robertson, says the radar “will see whatever man made” under a leafy triple canopy, or under netting designed to foil conventional radar systems.

“Stealth” aircraft, designed to avoid detection by radar, have been around since the 1970s. Radar systems illuminate the target with radio waves and then look for reflections, so absorbing incoming radiation, or deflecting it in a totally different direction, can shrink an aircraft’s radar signature dramatically. Half a dozen countries now build stealth aircraft, at great expense.

A new type of radar system, however, is capable of spotting such aircraft. It relies on the proliferation of mobile-phone signals. When a plane flies through an environment filled with such signals, the “aircraft shadow in this chatter” becomes visible, says John Pendry, a radar expert at Imperial College in London. Mike Burns, the president of MSE, a small defence contractor in Billerica, Massachusetts, says stealth bombers have indeed been detected against backgrounds of mobile-phone radiation because “a hole” appears in the constant chatter of signals.

This technique can be used only in populated areas, with lots of mobile phones. But it has an edge over standard radar, in addition to being able to spot previously invisible aircraft. It is “passive”, because it uses ambient radiation to illuminate the target. This means the target aircraft cannot tell that it is being watched (whereas it can with traditional radar). In short, it is the radar-detection system, rather than the aircraft, that has become invisible. It is just the latest example of the arms race between concealment and detection.

Medical robots

Swallow the surgeon

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Ronald Grant Archive



Biomedicine: Tiny medical robots are being developed that could perform surgery inside patients with greater precision than existing methods

IN THE 1966 film “Fantastic Voyage”, a submarine carrying a team of scientists is shrunk to the size of a microbe and injected into a dying man. The crew’s mission is to save the man’s life by dissolving a blood clot deep inside his brain. After a harrowing journey through the patient’s body, the scientists succeed: the clot is destroyed and the patient cured.

For decades, scientists and fiction writers alike have been fascinated by the possibility of tiny machines that can enter a patient, travel to otherwise inaccessible regions, and then diagnose or repair problems with far less pain and with far greater precision than existing medical procedures. In his famous speech from 1959, “There’s Plenty of Room at the Bottom”, Richard Feynman, an American physicist, called this concept “swallow the surgeon”. More recently proponents of nanotechnology have imagined swarms of “nanobots”—tiny machines just billionths of a metre, or nanometres, across—that might fix mutations in a person’s DNA or kill off cancer cells before they have a chance to develop into a tumour.

Such nanobots still exist only in the realm of science fiction, of course, and it may take decades before they become practical. But there is progress in developing small medical robots for sensing, drug delivery or surgery inside the human body. The most clinically advanced devices focus on the human gastrointestinal (GI) tract, since it is easily accessible and can accommodate objects several centimetres in size. In addition, researchers are developing micro-robots, with dimensions measured in millimetres or micrometres (a human hair is around 100 micrometres in diameter), which should be able to reach more delicate areas, such as the inside of the eyes or the bloodstream.

Among the pioneers of gastrointestinal devices is Given Imaging, an Israeli company that developed the “Pillcam”—a camera-equipped capsule that measures 1.1cm in diameter and 2.6cm in length, and can be swallowed. On its journey through the GI tract the device takes pictures which are transmitted to a computer. Because it causes less discomfort and is more effective than other diagnostic methods for examining the small bowel, it has become widely used since its introduction in 2001.

Although the Pillcam is technically not a robot—it is a passive device that relies on the body’s regular peristaltic contractions to propel it through the intestine—its success opened up the field, says Paolo Dario, a professor of biomedical robotics at Scuola Superiore

Sant'Anna in Pisa, Italy. Research groups around the world are now taking the next steps. At Dr Dario's laboratory, the Centre for Research in Microengineering, scientists have been designing prototypes of capsule robots that have legs for active locomotion. The legs, which are slightly curved, resemble those of insects, with tiny hooks on the tips of their feet to provide enough friction to enable movement in a slippery environment. This should allow the robots to crawl around the GI tract and obtain detailed images, dispense therapeutics or, with the right surgical tools, perform biopsies.



Some assembly required

Dr Dario's group is also collaborating with other European researchers on an ambitious project called ARES (short for Assembling Reconfigurable Endoluminal Surgical system). Its objective is to design a modular gastrointestinal robot made up of individual pieces that are small enough to be swallowed, one at a time. Once inside the stomach, the idea is that these pieces will assemble themselves into a larger robotic device. The aim is to build an "operating room" inside a patient that can be controlled from the outside by a doctor, says Dr Dario, who is co-ordinating the project.

He and others in the field acknowledge that there are many obstacles to overcome. A big problem, for example, is how to provide power to tiny medical robots. Batteries can provide enough energy for passive capsules like the Pillcam, but robots with active locomotion pose more of a challenge, and micro-robots are likely to need more energy than batteries can store at such small scales. Instead of adding a power source to the device, which increases its weight and bulk, one approach is to apply external magnetic fields to a small robotic device that contains magnetic material, allowing it to be steered simply by controlling the magnetic fields around it.

Scientists from the Institute of Robotics and Intelligent Systems at the Swiss Federal Institute of Technology (ETH) in Zurich plan to use this technique to steer tiny robots inside the eye for sensing, drug delivery and surgery. Current retinal procedures to repair detachments or rips, for example, may involve several incisions in the eye and stitches to tie off the perforated areas.

Using a micro-robot, by contrast, might involve only one incision and smaller surgical instruments. It might thus require only a mild topical anaesthetic and no stitches, since eye incisions at very small scales can self-seal, says Jake Abbott, a researcher at the institute who is working on the project. In addition, micro-robots could deliver drugs directly to veins inside the retina that have become obstructed by clots, a condition that can cause blindness and for which there is at present no reliable cure. Researchers at the ETH have designed a special ophthalmoscope with which they plan to track the robots inside the eye.



Sylvain Martel and his colleagues at the NanoRobotics Laboratory at Ecole Polytechnique de Montréal in Canada are also using magnetic fields, but in a different way. They are using fields generated by a magnetic-resonance imaging (MRI) machine to ferry small beads through the bloodstream with the goal of delivering therapeutics close to tumours. This has several advantages, says Dr Martel. For one thing, most hospitals already have an MRI machine, so there is no need to construct or buy additional equipment. Furthermore, as well as propelling a magnetic device through the body, an MRI machine can also locate it.

All of this is possible because an MRI machine contains both a large magnet that creates a strong magnetic field, and also a set of gradient coils that superimpose weaker but adjustable fields upon it. These coils are normally used to select slices for creating three-dimensional images, but the magnetic fields they create can also be used to exert a force on a small magnetic object inside a scanner. Dr Martel and his colleagues have developed software to do just that. Last year his team achieved a milestone when it manoeuvred a 1.5-millimetre bead through a 5-millimetre artery in a living pig. Since then the researchers have reduced the bead's size to about 250 micrometres.

But magnetic propulsion has some drawbacks. The fields must be carefully controlled, or they could cause a micro-robot to go off course, with potentially harmful or even fatal consequences inside a human body.

And the fields produced by gradient coils in a conventional MRI machine are not strong enough to pull on particles below about 250 micrometres in size, says Dr Martel, though an upgraded MRI system with more powerful coils could propel beads as small as 50 micrometres, he adds. Still, that means smaller blood vessels and other delicate areas inside the body remain out of reach.

Borrowing from nature

To circumvent these problems, some researchers are looking to nature for inspiration. Microbes, for example, have developed successful methods to manoeuvre within bodily fluids. Whereas large animals swim by pushing against water with their fins or limbs, this approach is ineffective at very small scales. To microbes, fluids appear thick and still, and viscosity is the main force small organisms must reckon with. As a result, bacteria have developed a unique way of swimming: using tiny rotary motors called flagella, which resemble corkscrews.

James Friend, co-director of the Micro/Nanophysics Research Laboratory at Monash University near Melbourne, Australia, is building a flagella-inspired micro-motor he hopes will one day propel a micro-robot through an artery or vein. At the core of the motor are piezoelectric materials—special crystals or ceramics that change shape very slightly in the presence of an electric field. When such a material is placed in a rapidly alternating electric field, it starts to vibrate. That vibration can then be coupled to another structure to turn a rotor, which in turn operates a flagellum-like tail. In recent years Dr Friend has built successively smaller versions of his motor—the current version is 250 micrometres in diameter. Providing an on-board power supply is difficult, however, so he is investigating the use of external magnetic fields to power the device.

An alternative approach is not to imitate nature, but to harness it—by hitching a ride with a bacterium. To get beyond the size limitations of magnetic beads inside an MRI scanner, Dr Martel and his colleagues are also working with “magnetotactic” bacteria, which orient themselves with magnetic fields. Because they are so tiny (only about two micrometres across), they are not strong enough to swim against the blood flow of larger vessels, though they are able to swim through vessels as little as four micrometres in diameter. Dr Martel’s idea is to use the larger magnetic beads to transport the bacteria close to a tumour, and then release them and coax them, using applied magnetic fields, to swim to the tumour and deliver a therapeutic payload. Preliminary experiments in rats suggest that the bacteria can be steered toward tumours using specially designed magnetic coils.

Metin Sitti, director of Carnegie Mellon University’s NanoRobotics Lab in Pittsburgh, Pennsylvania, is using bacteria as biological motors to propel small spheres through fluids. Instead of relying on an external system for controlling their movements, Dr Sitti and a colleague use chemical signals to tell the bacteria what to do. In recent experiments they proved that they could stop and start the bacteria’s flagella simply by exposing them to two different kinds of substances. Successful steering of the bacteria will be the subject of further tests, says Dr Sitti, but could be done via chemotaxis—a process by which small organisms follow gradients in the concentration of a particular chemical in order to find food or escape from toxic substances.

Medical robots have much potential, but many of the proposed devices, especially those that incorporate biological organisms, may not be practical for many years. Dr Sitti, for one, acknowledges that his project may take a decade or longer to commercialise. But other efforts, such as adding active locomotion to gastrointestinal capsules, may be only a few years away. Dr Dario says medicine is “at the beginning of a new era” as open-wound surgery gives way first to minimally invasive techniques, and then to procedures that will be completely concealed and leave no visible scars. Evidently the ideas depicted in “Fantastic Voyage” continue to resonate: a remake of the film is due to be released in 2010.

Case history

Touching the future

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Perceptive Pixel



Computing: Touch screens are becoming an increasingly popular way to control mobile phones and other devices. How does the technology work, and where is it heading?

THE proliferation of touch screens in electronic devices over the past two or three years has been so rapid that you may have found yourself trying to press an on-screen button or icon when sitting at your computer only to realise, much to your frustration, that it is not a touch screen. Many mobile phones, most famously Apple's iPhone, now have touch-screen interfaces, as do satellite-navigation systems and portable games consoles. Confusingly, however, most computers do not—so far.

But that may be about to change. Microsoft has already demonstrated a prototype of Windows 7, the next version of its flagship operating system, based around "multi-touch" capabilities, which allow a touch screen to sense more than one finger at once. As well as being able to press buttons, tap icons, call up menus and scroll windows, users will be able to rotate and stretch on-screen objects using two fingers at a time, as they already can on the iPhone. For its part, Apple is rumoured to be working on new versions of its desktop and laptop computers with touch screens. It has already taken a half-step in this direction by putting multi-touch trackpads into its laptop computers.

So the touch screen could be on the verge of becoming a standard part of computer interfaces, just as the mouse did in the 1980s. Many people thought that would never happen: surely switching between keyboard and mouse would slow people down and make them less productive? In fact, mouse-driven interfaces can be far more efficient, at least for some tasks. The same seems likely to be true of touch-screen interfaces. The touch screen will probably not replace the mouse and keyboard, but will end up being used for some tasks.

How touching

Like the mouse, the touch screen has been around for quite a while. Indeed, one of the ironies of Microsoft's demonstration of Windows 7 was that it was carried out using a screen made by Elo TouchSystems, which pioneered the commercialisation of touch screens in the 1970s. Today countless supermarket checkouts, restaurant tills, automated-teller machines, airport check-in kiosks, museum information-booths and voting kiosks use touch screens. Intuitive and user-friendly they may be, but new

they are not.

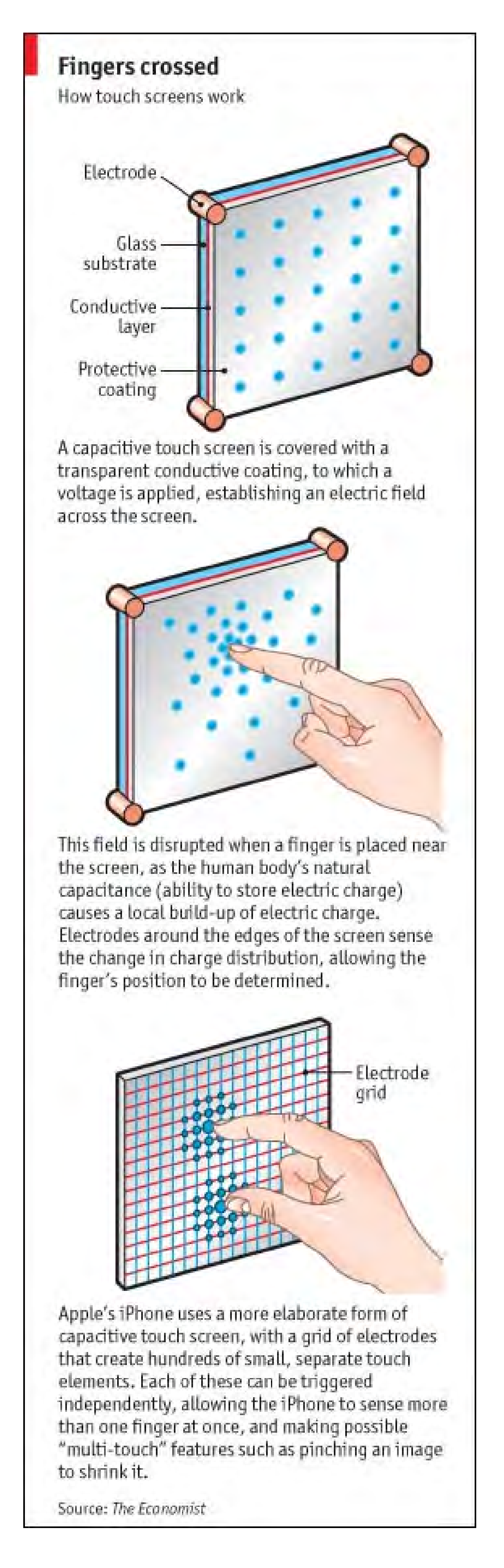
Elo TouchSystems' first touch screen grew out of the work of Sam Hurst, a physicist at Oak Ridge National Laboratory, who was on teaching leave at Kentucky University. His original touch sensor had nothing to do with screens. It was designed to save time when manually inputting a huge stack of spectrometry readings—in essence, a series of jagged lines on graph paper—into a computer. Rather than waiting two months while graduate students did the job by hand, Dr Hurst decided that there had to be an easier way.

Touch screens may be intuitive and user-friendly, but they are not new.

What he came up with, in 1971, was a device consisting of two pieces of electrically conductive paper, separated by an insulating layer. A needle poked into the paper acted as a bridge between the two layers. Dr Hurst could determine the needle's horizontal and vertical position by applying a voltage across the sheets and using voltmeters to measure the change in voltage when he inserted the needle. He could then place a spectrometry plot on the device, trace over its jagged line using the needle, and read off the co-ordinates quickly from the voltmeters as he went along.

Dr Hurst realised he had hit on something, but it took him a while to work out precisely what. He founded Elographics (now called Elo TouchSystems) with nine colleagues and tried selling his device. "It turned out it wasn't a good business plan, because we were aiming it at a scientific market," says Dr Hurst, who is now retired. It was not until 1973 that he thought about adapting his invention so that it could be laid over screens.

Elographics then did away with the needles and developed a new device based on two transparent, conductive surfaces separated by a small air gap maintained by a series of spacers. When a finger pressed the two surfaces together, they made contact, and the finger's position could be determined using the technique that identified the position of the needle in Dr Hurst's original device. The result was the first "resistive" touch screen. It is used in many devices and is still the commonest type of touch screen today, accounting for 91% of unit sales in 2007. (This type of screen is used in the Nintendo DS games console, for example.)



But this is not the only way to build a touch screen, and nor was it the first. Bill Buxton, an adjunct professor of computer design and interaction at the University of Toronto and a principal researcher at Microsoft Research, says IBM was working on infra-red touch screens as early as 1965. These are based on a grid of invisible infra-red beams that criss-cross the surface of a screen. When a finger touches the screen, it breaks a horizontal and a vertical beam, which reveals its position.

This kind of touch screen was used in a computer-assisted instruction system, called PLATO IV, that was

developed in the late 1960s at the University of Illinois at Urbana-Champaign, and released in 1972. It allowed students to answer questions by touching the screen, and was a genuine “touch” screen, because there was no need to apply pressure to the screen. “Surface acoustic-wave” touch screens work in a similar way, with beams of ultrasound rather than infra-red light.

The iPhone uses yet another technology, called a capacitive touch screen, which has even more distant and unusual origins. As far back as 1953 Hugh Le Caine, a Canadian pioneer of electronic music, was developing capacitive sensors for an early synthesiser, called the Sackbut, in which the position of his fingers controlled the timbre of the sound.

A capacitive touch screen is covered with a transparent conductive coating, to which a voltage is applied, establishing an electric field across the screen. When a finger touches the screen it disrupts this field, as the human body’s natural capacitance causes a local build-up of electric charge. Electrodes around the edges of the screen sense the change in charge distribution, allowing the finger’s position to be determined (see diagram).

In fact, the iPhone uses a more elaborate form of capacitive touch screen. A grid of electrodes divides its display into an array of hundreds of small, separate touch elements. Each of these can be triggered independently, enabling the iPhone to sense more than one finger at once, and making possible “multi-touch” features, such as pinching an image to shrink it. Multi-touch is also an old idea: the first prototype was cooked up in 1984 by Dr Buxton, but it was a touch pad, since it was not built into a screen. “The reason we didn’t make them display devices is not that we didn’t want to—it was because we couldn’t figure out how to make them cheap enough to put on a screen,” he says. For that he credits Bell Labs, which came up with the materials necessary to make a capacitive multi-touch device that could be combined with a computer display.

You can touch this

If touch screens have been around for so long, why did they not take off sooner? The answer is that they did take off, at least in some markets, such as point-of-sale equipment, public kiosks, and so on. In these situations, touch screens have many advantages over other input methods. That they do not allow rapid typing does not matter; it is more important that they are hard-wearing, weatherproof and simple to use. “In a museum, if you can’t figure out how to use an input device, you aren’t going to use it,” says Joel Kent, a senior scientist at Elo TouchSystems.

But breaking into the consumer market was a different matter entirely. Some personal digital assistants, or PDAs, such as the Palm Pilot, had touch screens. But they had little appeal beyond a dedicated band of early adopters, and the PDA market has since been overshadowed by the rise of advanced mobile phones that offer similar functions, combined with communications. Furthermore, early PDAs did not make elegant use of the touch-screen interface, says Dr Buxton. “When there was a touch interaction, it wasn’t beautiful,” he says.

That is why the iPhone matters: its use of the touch screen is seamless, intuitive and visually appealing. When scrolling quickly through lists, for example, the lists keep moving, apparently under their own momentum. On-screen objects behave in physically realistic ways. “Apple did an outstanding job with the iPhone in every aspect,” says Dr Buxton. “People are starting to demand the same quality of design: they don’t just want function.”

Until recently, the computing power and graphics capabilities of desktop computers, let alone hand-held devices, were not good enough for elegant touch-screen interfaces to work, says Jeff Han, founder of Perceptive Pixel, a touch-screen spin-out from New York University’s Courant Institute of Mathematical Sciences. And even if they had been sufficient, the public might not have been ready for such interfaces. “In the 1990s people were still getting used to Windows 95,” he says. “But right now the public is ready—even the most lay person can use a mouse.”

Microsoft and Apple



Pointing the way: Surface, Microsoft's tabletop touch-screen computer (left and centre); Apple's iPhone (right)

Another factor that has held back touch screens is a lack of support for the technology in operating systems. This is a particular problem for multi-touch interfaces. Modern operating systems, driven by keyboards and mice, are unable to cope with a system that is, in effect, like connecting several mice at once. Instead, they are based on the idea of a single cursor that glides from one place to another. In developing his touch screens, Dr Han says he was forced to create his own operating system. "We didn't want to," he says. "But Windows and Linux really don't understand more than a single point."

Apple and Microsoft have now cottoned on, however, and have added multi-touch support to OS X (the operating system that powers Macs and iPhones) and Windows. It is still not clear what features Windows 7 will include, but some clues can be gleaned from Microsoft's Surface, a computer built into a tabletop with multi-touch input. It is an expensive device that is initially aimed at the business market: it is being deployed in hotels, restaurants and casinos.

Surface uses under-the-table projection to produce the tabletop image. The screen is also illuminated from below with infra-red light, which reflects off objects in contact with the screen. These reflections are detected by cameras, also mounted beneath the table. "The very first one had a single camera lying on the floor, looking up at a savaged IKEA table," says Andy Wilson of Microsoft Research, who started developing Surface with his colleague Steve Bathiche in 2001.

The beauty of using cameras in this way is that as well as detecting multiple touch inputs, and supporting several users at once, they can also recognise objects placed on the table's surface. For example, users of the system in a restaurant could place empty glasses on an on-screen icon to indicate that they would like a refill.

Perceptive Pixel's huge touch screens also use cameras to detect touch inputs, but in a different way. The image on the screen is back-projected, but the touch-detection relies on a technique called "frustrated total internal reflection". A transparent acrylic sheet is illuminated by a number of infra-red light sources placed around its edges. The infra-red light is confined within the acrylic sheet, because beams of light are internally reflected off its front and back faces. When someone presses the sheet with a finger or stylus, however, this "total internal reflection" is disrupted, or frustrated, and some of the light leaks out of the sheet at the point of contact. This light is picked up as a bright spot by an infra-red camera behind the screen. Touching the screen in many places at once results in several spots.

Inappropriate gestures

Dr Han is a virtuoso when it comes to demonstrating the potential of touch screens. He calls up images and charts and navigates through three-dimensional maps, panning and tilting them using special multiple-finger gestures. He has also developed special gestures to call up menus and perform other commands. When you have a very large screen, covering an entire wall, you do not want to have to walk to one corner to activate the Start Menu, he says. So drawing a loop with one finger might call up the options menu, for example. Designing such gestures can be tricky. "You want something that's hard to do accidentally, but not hard to learn," he says.

Microsoft is also developing gestures, and Apple has already introduced several of its own on its multi-touch enabled laptops, such as two-fingered dragging to scroll, and three-fingered flicking to go forward or back a page in a web browser. The danger is that a plethora of different standards will emerge, and that particular gestures will mean different things to different devices. Ultimately, however, some common rules will probably emerge, as happened with mouse-based interfaces. "Double-clicking didn't used to be universal," notes Dr Buxton, but now it is accepted as the standard way to open a program or document on most computers.

The double click does not translate terribly well to touch screens, however. This has led some researchers to look for alternatives. In developing his multi-touch screen, Dr Han found that there can be more to touch input than simply detecting contact. He has found a way to determine how much pressure is being applied. Adding a thin polymer layer, scored with microscopic ridges, to his touch screens causes the bright spot created by a finger touching the screen to vary in size and brightness depending on the pressure. This makes it possible, for example, to drag an item on the screen and then, by pushing harder, to slide it under another item.

Quite what will be done with multi-touch and pressure-sensitive screens is still unclear, says Lorna Wood, marketing manager of Elo TouchSystems. “A lot of the applications have yet to be developed that really take advantage of this technology,” she says. But touch screens seem likely to become more widespread in desktop PCs, laptops and mobile phones. According to iSuppli, a market-research firm, sales of touch screens will increase from 341m in 2008 to 833m in 2013.

Despite the iPhone’s success, it may prove to be PCs, rather than hand-helds, that benefit the most from touch-screen technology. That is because touch screens, like mice, are best suited to manipulating information, rather than inputting it in the first place—an area in which keyboards remain unchallenged. PCs with keyboards and touch screens (not to mention mice or trackpads too) could offer the most flexibility, letting users choose the appropriate input method for each task. As Dr Buxton puts it: “Everything is best for something, and worst for something else.”

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Home, green home

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Energy and the environment: Even as housing markets in many countries collapse, demand is growing for low-impact "green" homes

JEFF ROGERS welcomes visitors at the door of his newly renovated house, atop a sandy ridge on Cape Cod, Massachusetts. From outside the two-storey building seems unremarkable: its neat white trim, pale-yellow clapboard siding and shingle roof have been the local style for centuries.

But the house that Mr Rogers finished last year is anything but traditional. It uses no fossil fuel and generates its own electricity. It contains few toxic materials—adhesives, paints and insulation are all free of formaldehyde and contain low levels of volatile organic compounds, and nothing in the house produces carbon monoxide.

Despite housing a family of four, the house uses less than a third of the typical amount of water, thanks to modern appliances, dual-flush toilets and low-flow taps and showers. A geothermal heat pump heats and cools the house using groundwater; even though it has no air conditioning, the house is cool in the Cape's muggy summer heat. On the roof, photovoltaic solar panels sit next to arrays of water-heating tubes. Inside, the bright, warm lights recessed into the ceilings are low-energy light-emitting diodes (LEDs). Even the most traditional-looking elements are unusual: the roof shingles are made of recycled plastic and sawdust. This innocuous house on a quiet lane is, in fact, one of the greenest homes in America.

Although Mr Rogers runs a firm called New England Green Building, his house is within the budget of many homeowners. It is typical of a new generation of green homes that have a dramatically reduced environmental impact, but do not require big changes in their inhabitants' lives.

Indeed, a green-home boom is getting under way, thanks to rising energy prices, new standards (the European Union's Energy Performance of Buildings Directive, Britain's Code for Sustainable Homes and California's Green Building Standards Code, to name three recent examples), and improved technologies. Many of these technologies have been around for a while, but they are now ready for the mainstream. In 2007 McGraw Hill Construction, a research firm, reported that 40% of all renovation in America included some green features, mostly windows and heating/cooling systems. The company predicts green homes will account for 10% of all building starts in America by 2010, with new green homes worth $20 billion in that year. When housing arises from its torpor, it could find itself transformed.

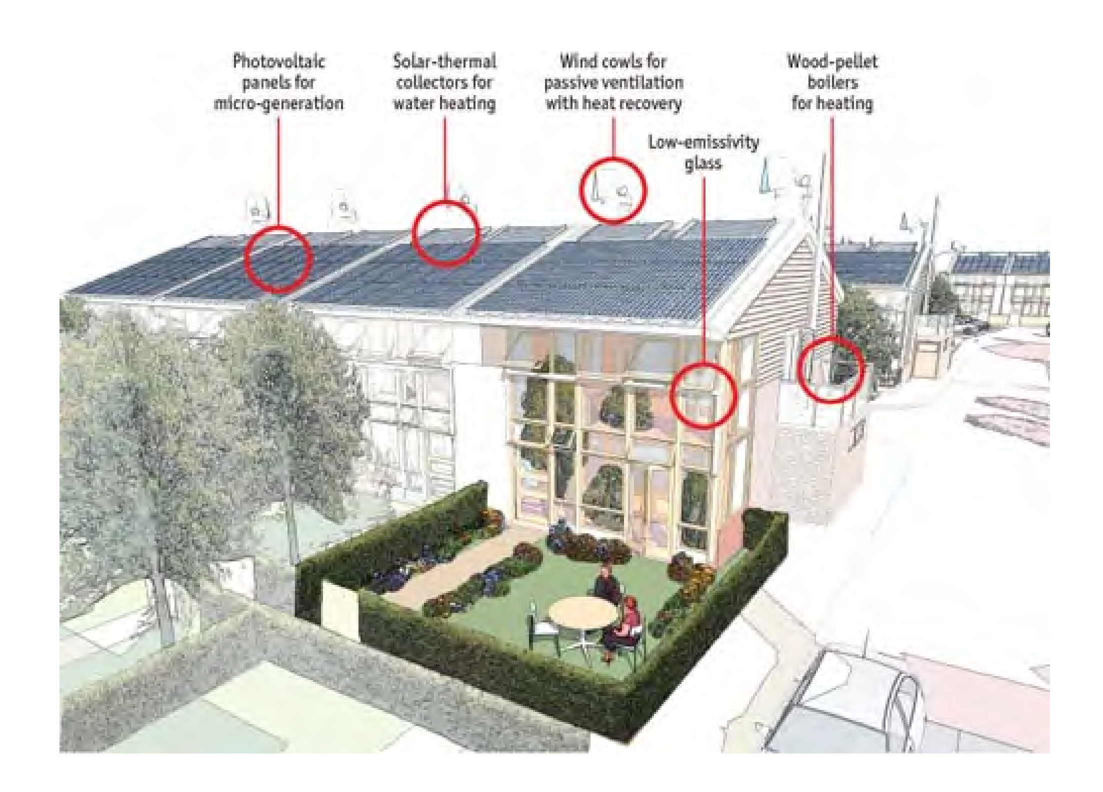
Greenery can be hard to define, so the emergence of credible certifiers is clarifying things. The most stringent form of certification is the German Passivhaus standard, which applies to buildings that reduce their energy requirements so dramatically—by 90% compared with standard construction—that they can

forgo heating and cooling systems. In 2007 the United States Green Building Council released a version of its LEED green-building standard that applies to homes. (Mr Rogers's home is certified as LEED Platinum, the highest standard available.) And for more than a decade, America's Environmental Protection Agency has offered Energy Star for Homes, a label indicating specific features meant to reduce energy use. Sam Rashkin, the programme's director, expects nearly 1m American homes to carry the label by the end of this year.

Market forces are at play, too. Mr Rogers says his 2,100-square-foot house—just under the average for new homes in America—cost $75,000, or 23%, more to build impeccably green than it would have otherwise. He received $35,000 in rebates and incentives from state and federal governments, and he expects to recoup the rest in avoided energy costs within five years. Given the recent spike in energy prices, it may not take that long.

Systems, like Mr Rogers's solar panels, that enable homes to generate their own electricity may get a lot of attention, but finding ways to reduce the need for energy in the first place is just as important. Green homes start with a sealed envelope: places where air can flow between the interior and exterior are carefully blocked. Sustainable Spaces, a company in San Francisco that assesses the environmental performance of houses, measures how airtight a home is using a device called a "calibrated blower door"—an adjustable barrier that suspends a powerful fan in a blocked doorway. Matt Golden, the company's founder, says that a typical home exchanges around 35% of its air with the outside each hour, whereas carefully sealed "green" homes rate around 7%. (This correspondent's Victorian home scored an abysmal 80%.)

The holes in the envelope that cannot be eliminated are getting tighter too: windows have improved enormously in the past three decades, thanks to low-emissivity or "low-e" coatings that selectively allow different amounts of heat and visible light to pass through; multiple panes of glass and plastic film filled with insulating argon or krypton; insulating frames with integrated thermal breaks; and tight seals on closed windows. Even aluminium spacers between panes have been replaced with plastic because they conduct too much heat. But there is more to come.



Upgrading windows

Electrochromic glass, with changeable opacity, is one new avenue of exploration. Some of the most promising is produced by a firm called Sage Electrochromics, based in Minnesota. Its product, which consists of sheets of glass with a metal-oxide coating, was first used in skylights in 2003. When a voltage is applied across the coating, the window darkens, allowing less light to enter but still permitting a view. America's Department of Energy (which developed low-e coatings in the 1970s) has used this glass, along with an insulated sash, to develop a "zero-energy" window that saves more energy in reduced heating and lighting than it needs to operate.

John Van Dine, Sage's founder, says his company is about to invest in a new production facility that should reduce costs enough to make electrochromic windows competitive for homes by 2010. The company is also working on continuously variable darkening (current models have only two settings) and windows that are powered entirely by self-contained solar cells.

An even bigger leap may come from refining an older idea. Sheets of glass separated by a vacuum could bring windows' insulating properties up to par with insulated walls, yet allow them to be nearly as thin as single panes of glass. The idea of vacuum-insulated panes has been around for nearly a century, and NSG/Pilkington, a Japanese firm that is one of the biggest glassmakers in the world, has sold such panes since 1996. But they remain a technical challenge: the difference in temperature causes the inner and outer sheets of glass to expand by different amounts, so that NSG/Pilkington's windows can be used only where the temperature difference is less than 35ºC, which rules out many homes in need of insulation.

David Stark thinks he has a solution. His company, EverSealed Windows, based in Colorado, has patented a metal baffle bonded to both sheets of glass that allows them to expand and contract separately, while maintaining a vacuum that he says will last for decades. Mr Stark says vacuum-insulated windows at competitive prices could be on the market in three years. This could precipitate a big shift in the window industry, and its focus on spacers, adhesives and sealants: "All of that goes out the window," he says.

Once the home has been duly sealed, the flow of air, moisture and heat in and out of it can be carefully controlled. Mr Rogers's home features a heat-recovery ventilator—a device in his basement that filters incoming air and exchanges heat between incoming and outgoing air. Such devices can remove stale air from a home while retaining 85% of its heat. Steve Harris, a principal at ZEDfactory, an architectural firm based near London that designs green residences (pictured), prefers to use a special heat-exchanging wind cowl his company has developed. It uses no electricity, yet is able to recover 70% of the heat of outgoing air. The device, an angular scoop on the top of a home, has become a signature of the firm's style, and will soon be commercialised for broader use.

The best-known green-home technology must surely be the compact-fluorescent light bulb, the very icon of green living. Yet the technology that will eventually eclipse it now makes economic sense, with the long-anticipated arrival of LEDs—a 40-year-old technology—in home lighting. Compact fluorescents use about one-third as much electricity as incandescent bulbs to produce the same amount of light. But new LEDs use just 12% and can produce light of similar quality to warm halogen bulbs. With lifetimes measured in decades, they are a clear improvement over incandescent bulbs. "It's the difference between a cellphone and the old rotary phones," says Gary Trott, an executive at Cree, an LED manufacturer in North Carolina. Last year Cree began selling a dimmable LED version of common recessed ceiling fixtures. The firm estimates that under typical conditions, these lights could pay for themselves in five years, and save hundreds—or, where lights are left on more, thousands—of dollars over their lifespan.

The LED is poised to revolutionise the lighting industry. Philips, a big Dutch electronics firm which claims to have made one out of every four lights worldwide, says sales of LED lighting grew by 30% last year in an overall market that was worth €700m ($960m). Thanks to a string of acquisitions, its "green lighting" sales grew by 17% last year, with the strongest growth, tellingly, in home lighting.

Once a house is sealed, producing its own power and using it efficiently, its inhabitants are the weak link.

Another iconic green-home feature is a sleek, black photovoltaic panel on the roof, quietly turning sunlight into electricity. In most modern home-power systems, any excess power can feed into the grid during the day, and the house draws power from the grid only when needed. A true net-zero-energy house requires some onsite power source. Nonetheless, enthusiasm for solar power is not always rational: only with incentives from governments and utilities does it make sense for most homeowners, who sometimes rush into it rather than doing other things first. "No one should be allowed to put a solar system on until every light is a compact fluorescent, and every duct is sealed," says Matt Golden, Sustainable Spaces' founder, who points out that simple measures to reduce demand can be hundreds of times more cost-effective than solar panels.

Still, solar power is approaching the point where it will be competitive without subsidies. Mr Harris, at ZEDfactory, says the simple solar-photovoltaic systems his firm sells, which cost around £11,000 ($20,000) installed, pay for themselves without subsidies within seven years—the average period most British homebuyers stay in a house. Directly heating water with solar-thermal energy makes sense more often, especially in areas that do not freeze. Solar water-heaters have recently become mandatory on new construction in Hawaii, and China is now the biggest user of solar-heated water in homes.

But are the residents green?

Once the house is sealed, producing its own power and using it efficiently, its inhabitants become the weak link. Lucid Design Group, a software company in Oakland, California, is trying to fix that. It has developed a web-based dashboard that uses the data from building-management systems to plot real-time electricity, water and gas usage. Simply visualising energy use this way can prompt homeowners to reduce their usage, says Joe Gotshall, a manager at the company. Lucid's dashboard was first used to pit groups of university students against one another in green dormitories at Oberlin College in Ohio. Mr Gotshall says the competition reduced energy consumption by 55%.

This approach may soon become possible on a much bigger scale when Greenbox, a Silicon Valley start-up, launches its first product in January. Presently in beta testing in Oklahoma, its online dashboard collects data from a new generation of smart meters being rolled out by utilities throughout America. It allows users to see exactly when they are consuming energy and what they are paying for it at any moment, rewarding behavioural change with visible results. Matthew Smith from Greenbox says that using the dashboard in his own home motivated him to spend $20 and 15 minutes plugging in a few power strips to allow him to switch off appliances when not in use. He saw immediately that he would save $100 each year thereafter.

Why had Mr Smith not done this before? Homeowners, it seems, apply unreasonably high discount rates when considering going green. Consumers also tend to undervalue a reduction in their exposure to energy-price increases. But that will soon be difficult to ignore. “When we first started,” says ZEDfactory's Mr Harris, “we were very much the loonies in the corner that people giggled about.” This winter, the only people laughing will be those who have followed their advice.

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Green homes

Another green revolution

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Most homes are in the developing world. They are going green, too

A CLAPBOARD house in Cape Cod is very different from a one-room mud-brick hut in the Indian state of Orissa, but making them into green homes involves a similar approach: using as little energy as possible to meet the occupants' needs. But in the developing world the impact of new technology can be far more transformative.

LUTW



Soaking up the sun

Consider the cooking of food, which is usually done by burning wood or dung. Typically 80% of the fuel's energy is wasted, and the resulting smoke pollutes indoor air and contributes to more than 1.6m deaths a year, according to the World Health Organisation. But using a carefully designed stove to enclose the fire and direct heat into the pot, fuel consumption and pollution can be reduced dramatically.

The problem, says Bryan Willson, a professor of mechanical engineering at Colorado State University, is that efficient use of wood requires a careful mix of fuel and air to maintain combustion at the appropriate temperature. To that end, Dr Willson and his students developed stoves with simple carburettors that can cut particulate emissions by 75% and fuel consumption by half.

Their design is now being commercialised by an NGO called Envirofit. It produces four models in China and India that sell for $10-80. Ron Bills, Envirofit's boss, hopes to sell 10m stoves worldwide by 2013. Dr Willson's team, meanwhile, has devised an experimental stove that generates electricity using a thermoelectric device and powers a white light-emitting diode (LED).

LEDs present an opportunity to leapfrog from dim, flickering flames straight to bright, clean electric light. In 2002 Dave Irvine-Halliday, a Canadian engineer, set up an NGO, the Light Up the World Foundation, to distribute small, solar-powered LED systems. (A solar panel charges a battery that powers the light at night.) LEDs are becoming increasingly affordable. In a scheme set up by the University of Illinois and the Jagannath Institute for Technology and Management, an engineering college in Orissa, rural workers earning $1-2 a day snapped up solar-LED lights for $20.

For people using kerosene lamps, the fuel saved by switching to a solar-LED system can add up to a month's earnings each year. LEDs are safer, too. To Western eyes they may be a "green" technology, but to buyers in the developing world they are simply safer and cheaper than the alternatives.

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Hydrogen cars

The car of the perpetual future

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From The Economist print edition

Transport: Mass-produced hydrogen fuel-cell cars have been promised for a decade. Where are they?

Phil Wrigglesworth



DURING a keynote address at the Consumer Electronics Show in Las Vegas in January, the boss of General Motors (GM), Rick Wagoner, unveiled the Cadillac Provoq, a new hydrogen fuel-cell concept car. With a drivetrain emitting only water vapour, a 300-mile range and a top speed of 160kph (100mph), the vehicle, said Mr Wagoner, represented “the promise of truly sustainable transportation”. It was a promise that sounded vaguely familiar.

A decade earlier, in 1998, Mr Wagoner’s predecessor, Jack Smith, told the Detroit auto show that GM had a plan to produce a production-ready fuel-cell vehicle “by 2004 or sooner”. That same year, Ford’s incoming boss, Jacques Nasser, said that he saw fuel-cell cars as being a viable alternative to petrol cars for many people during the course of his career (he was replaced in 2001). And as recently as 2004 California’s governor, Arnold Schwarzenegger, rhapsodised about “hydrogen highways” all across the state by 2010.

Ever since the writings of Jules Verne in the 19th century, the idea that hydrogen would one day displace fossil fuels has attracted many adherents. Most recently, the dream has centred on hydrogen-fuelled cars,

powered by fuel cells—electrochemical devices that combine stored hydrogen with atmospheric oxygen to generate electricity and water vapour. (This means the car produces no CO_2 emissions directly, but whether it is emission-free overall depends on the source of the energy used to produce the hydrogen. The hydrogen is more of a temporary store of energy from other sources than a fuel.)

But the promise of hydrogen-powered personal transport seems as elusive as ever. The non-emergence of hydrogen cars over the past decade is particularly notable since hydrogen power has been a darling of governments worldwide, which have spent billions of dollars in subsidies and incentives to make hydrogen cars a reality.

Proponents of hydrogen fuel-cell technology point to advances that have been made in the size and efficiency of fuel cells, and the appearance of a smattering of hydrogen filling-stations in a few parts of America and Europe. Carmakers are also keen to publicise the handful of trials that are providing them with data on the real-world performance of hydrogen fuel-cell cars.

This year GM and Honda are deploying a few such vehicles, which are being put into the hands of carefully selected drivers. GM has recruited celebrities, journalists, businesspeople and members of the public to test a fuel-cell version of its Chevrolet Equinox. Honda has started leasing small numbers of its FCX Clarity, which it describes as a "production model" to drivers in California.

But aside from these high-profile, low-volume projects, the logistical, technological and economic problems facing hydrogen fuel-cell cars mean that they are very unlikely to make it to market any time soon. One thing holding back hydrogen vehicles is a chicken-and-egg problem: why build cars if there is nowhere to fill them up, or hydrogen filling-stations if there are no cars to use them?

Just around the corner, honest

Earlier this year GM said that despite its own rapid progress on hydrogen fuel-cell vehicles, America's energy industry and government were lagging behind when it came to building hydrogen filling-stations. Mr Wagoner even said that this might mean that hydrogen cars would be deployed elsewhere first—such as China. Honda, meanwhile, is covering itself by developing a Home Energy Station, which drivers of fuel-cell vehicles can use to make their own hydrogen at home, by tapping into the domestic natural-gas supply.

"The real challenge as we move toward retail is that we need to change the nature of the fuelling system," says Catherine Dunwoody, executive director of the California Fuel-Cell Partnership (CaFCP), an industry body. She says that in order for fuel-cell cars to become a reality, hydrogen filling stations have to move from serving fleets of corporate or municipal vehicles to being able to serve private customers.

Phil Wrigglesworth



Duncan Macleod, vice-president of Shell Hydrogen, admits that there has been a "disconnected debate" between the carmakers and the fuel companies, but says discussions with carmakers over the past year have been much more productive. He says Shell's solution to the chicken-and-egg problem is a series of

local mini-networks, each comprising hundreds of fuel-cell vehicles and at least two refuelling stations. Despite the grand vision, however, Shell currently has only six hydrogen filling-stations worldwide. BP, another early advocate of hydrogen, is also retreating from its early bullishness: it closed its only hydrogen filling-station in Britain in 2007 and has recently started to switch its focus towards biofuels, rather than hydrogen, as a near-term replacement for petrol.

One thing on which carmakers and energy firms do agree is the need for government funding and the appropriate public policies in order to promote the commercialisation of hydrogen vehicles. Governments in Europe and America have been more than willing to oblige. Since President George Bush launched his Hydrogen Fuel Initiative in 2003, America's Congress has provided over $1 billion for hydrogen research—though not everyone approves. The Bush administration's enthusiasm for hydrogen has worked "to the detriment of nearly all other renewable energy sources," says Severin Borenstein, director of the University of California Energy Institute at Berkeley.

In Europe the flow of funding for hydrogen research has been slower to come, but no less substantial. In May the European Parliament approved €470m ($730m) for a fuel-cell and hydrogen initiative, a sum it expects the private sector to match. The establishment of the National Organisation for Hydrogen and Fuel-Cell Technology in Germany, a joint venture between German industry and government, recently put a further €500m into the pot.

How much more investment is needed to make mass-produced hydrogen cars a reality? According to a recent study by Oak Ridge National Laboratory, sponsored by America's Department of Energy (DoE), public funding of $10 billion would be required to get 2m hydrogen fuel-cell cars onto America's roads by 2025, rising to $45 billion for 10m cars. A report issued by America's National Academy of Sciences in July was less optimistic, estimating that $55 billion of government investment would be needed to put just 2m hydrogen cars on the road by 2023. And both reports assume that the technology will get a lot cheaper: the Oak Ridge study assumes it will be possible to make fuel-cell vehicle systems in quantity at a cost of $45 per kilowatt of output by 2010, and $30 per kilowatt by 2015.

This is ambitious. Although fuel-cell costs have dropped by 65% since 2002, according to the CaFCP, today's fuel cells cost around $107 per kilowatt. Are sudden cost reductions around the corner? Not according to one of the pioneers of fuel-cell technology, Ballard Power Systems, a Canadian supplier of fuel-cell systems to a range of carmakers. In November 2007 it sold its automotive fuel-cell division to Ford and Daimler after a decade of losses, citing the "realities of the high cost and long timeline for automotive fuel-cell commercialisation" for its exit from the business.

These realities are also being noticed outside the business world. In March this year the California Air Resources Board, an agency of California's state government and a bellwether for state governments across America, changed its requirement for the number of zero-emission vehicles (ZEVs) to be built and sold in California between 2012 and 2014. The revised mandate allows manufacturers to comply with the rules by building more battery-electric cars instead of fuel-cell vehicles.

The trouble with hydrogen

Even if the network of hydrogen filling-stations can be built, and the technological advances needed to reduce the cost of fuel-cell vehicles can be made, a huge problem still remains: the production and delivery of hydrogen in large quantities. The Oak Ridge study says the two most promising ways to produce hydrogen cheaply in the near term are to make it from natural gas (through a process called "steam reforming") at the filling stations themselves, or to make it from gas derived from biomass or coal at large, centralised plants, and then deliver it by lorry or pipeline.

Hydrogen sceptics point out not only the large capital costs associated with the production, transportation and storage of hydrogen, but also the availability of far more viable alternatives. Hydrogen is "just about the worst possible vehicle fuel", says Robert Zubrin, a rocket scientist and the author of "Energy Victory", a book on the post-petroleum future. Even if the requisite gains in fuel-cell technology are achieved, he says, the fuel-cell cars of the future should run instead on methanol, which has a higher energy-density than hydrogen and can be stored and transported much more easily.

Furthermore, steam reformation of natural gas is far from a zero-emissions solution, undermining the whole rationale of hydrogen cars in the first place. According to America's National Renewable Energy Laboratory, producing a kilogram of hydrogen by steam reformation generates emissions equivalent to 11.9kg of CO_2. Given that the Chevy Equinox fuel-cell vehicle can travel 39 miles on a kilogram of

hydrogen, and the FCX Clarity can travel 68 miles, powering these cars using hydrogen produced by steam reformation would result in emissions of 305 and 175 grams of CO_2 per mile respectively. By comparison, today's petrol-electric Toyota Prius hybrid produces tailpipe emissions of around 167 grams per mile, and many small petrol cars achieve similar results.

Even hydrogen optimists concede that the reliance on hydrogen from steam reformation is not viable in the long term. "If all we can do is make hydrogen from gas, we shouldn't even start the journey," says Mr Macleod at Shell. Instead, he says, the solution to large-scale hydrogen production lies in using renewable electricity to extract hydrogen from water via electrolysis. Others suggest making hydrogen using off-peak electricity or nuclear power. But it would surely be easier simply to use this energy to charge the batteries of all-electric or plug-in hybrid vehicles.

Yet for advocates of fuel-cell cars, hope springs eternal. The CaFCP sees tens of thousands of fuel-cell vehicles on the road by 2017; Shell predicts that mass roll-out of fuel-cell vehicles is "absolutely achievable" by 2020; and the DoE maintains that fuel-cell cars will be "practical and cost-effective" by the same year. BP is cagier, predicting that it will be 2030 before a significant number of fuel-cell vehicles are in use. In other words, claims that hydrogen will be the automotive fuel of the future are as true today as they ever have been.

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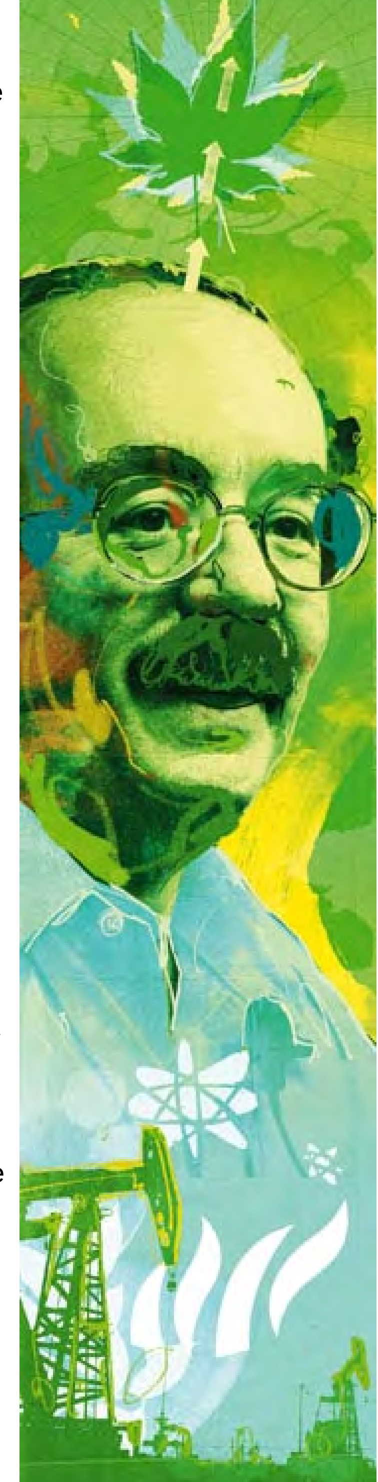
Brain scan

The frugal cornucopian

Sep 4th 2008
From The Economist print edition

Amory Lovins began making the case for resource efficiency decades ago, long before it became fashionable. Now things are going his way

Illustration by Andy Potts



IF ANYBODY should be on top of the world today, it is Amory Lovins. That is not just because the energy visionary makes his home on a mountain in Old Snowmass, Colorado. Rather, it is because today's interrelated energy and climate difficulties have at last made the world see the importance of resource efficiency, energy innovation and holistic design—principles that he has been advocating for nearly four decades.

For much of that time, Mr Lovins, who heads the Rocky Mountain Institute (RMI), a natural-resources consultancy, has been a lonely voice in the wilderness. As far back as the early 1970s, he sounded his first alarm about the potential damage that climate change might bring, but he was ignored. In a paper in *Foreign Affairs* in 1976, at the height of the energy crises and neuroses of that decade, he argued that what the world needed most was not new energy supplies but more efficiency. He was ruthlessly attacked by the energy industry and the political establishment, and his proposal for an alternative "soft path" out of the energy crisis was dismissed. Energy and economic growth always grew in lockstep, went the conventional argument, and to think otherwise was dangerously naive.

But history has proved him right. Thanks to a combination of high prices and public policies aimed at encouraging efficiency and conservation, America's energy use did decouple from economic output in the wake of the oil shocks of the 1970s. Crucially, this happened without impoverishing the country, proving his once-controversial thesis that growth and greenery can indeed go hand in hand. That experience, along with the recent global energy-price shock, has made it respectable for business and political leaders to talk about energy efficiency.

Mr Lovins should be pleased, but his satisfaction at having been proved right is tempered by lingering unease that there are echoes of the 1980s in today's debate. The main problem with the approach to energy in the 1970s, he argues, was that the issue was defined as a supply shortage. "The question they asked was how to get more energy, at any price, instead of asking: 'How should we use energy, why are we using it so wastefully, and what do people really use energy for?'" he says.

That question points to one of his main contributions to the energy debate. He insists that the goal of public policy should be to ensure adequate and affordable supplies not of energy *per se* but of "energy services"—as he loves to put it, the cold beer and hot showers made possible by energy. By redefining the problem that way, rather than merely subsidising more power plants or oil drilling, public policy can be made technology neutral, and consumer needs can be satisfied by demand-side measures if they prove cheaper than drilling or digging for new supply.

He is also growing concerned because he sees parallels, in today's energy debate, with the failed supply-side arguments made three decades ago. Just as President George Bush has done recently, Ronald Reagan subsidised the

search for costly domestic oil and gas on dubious national-security grounds. Mr Lovins argues that that policy was undermined by the “quiet gusher” of energy efficiency that came to market during that same period. The high energy prices of the 1970s gave way to an oil-price collapse in the mid-1980s that wiped out many of those investments in marginal oilfields—and bankrupted expensive forays into alternative energy. This happened, says Mr Lovins, because “efficiency is a fast resource, and it grabbed the pie first. By the time new supply came in, it was too late and it just ended up crashing the market.”

Echoes of the 1980s

And that is what could now happen globally, he reckons, pointing to the American example. He observes that a similar combination of high prices and supportive public policies (at the state level this time, given the federal government’s hostility under Mr Bush to all things green) has once again set off a quiet surge in efficiency. He calculates that during the decade to 2005, over three-quarters of the increase in energy services enjoyed by Americans was due not to new supply but to efficiency gains. At the same time, Congress has been lavishing subsidies on oil, gas and nuclear power. The 2005 Energy Policy Act, which John McCain called the “Leave no lobbyist behind” bill, handed out over $80 billion of such supply-side lard.

The odds of a fiasco are increased, he reckons, by the likelihood of a crash in oil prices: “the fundamentals do not support anything like these prices for long.” He thinks the Saudis can live comfortably with oil as low as $40 a barrel, and he does not seem persuaded by the chorus of despair arguing that the world has hit “peak oil” and will soon start to run out of it. In some ways the peak-oil debate is beside the point, in his view. Regardless of which camp is right, he argues that society should be doing the same things anyway to wean itself off petroleum altogether. And done properly, he suggests in his recent book “Winning the Oil Endgame”, such a transition to a safer and cleaner energy world could even be done profitably, thanks to the creation of entirely new, innovative green industries.

That assertion highlights an apparent contradiction in Mr Lovins’s argument, and points to several other criticisms that have been made about his work. If the oil price does indeed come tumbling down, surely the world’s newfound love for energy efficiency will vanish? A related critique is that Mr Lovins, in his eagerness to show that “negawatts” (as he likes to call energy savings) can be cheaper and more profitable than megawatts, downplays the challenges involved in moving off such entrenched, well-financed and functioning incumbents as petroleum and coal. He also stands accused of using blizzards of charts and statistics, some biased and others just downright impenetrable, to sell his arguments.

Mr Lovins rejects such charges, but some doubts linger. Though the energy guru likes to talk about revolutions and rapid change, history shows that the energy industry is exceedingly slow-moving. Its vast and long-lived capital stock gives incumbent firms big incentives to defend legacy assets and resist innovations. And the car and oil industries have unusually strong influence over public policy—a factor Mr Lovins may have underestimated. Indeed, asked about the politics of energy, he refers to his early childhood in America’s capital by quipping that “I fled Washington at an early age.”

His enthusiasm for market forces makes Mr Lovins a most unlikely eco-warrior.

And even some of his admirers admit there is some truth in the charge that he marshals obscure and interminable charts and statistics to baffle and browbeat his audiences into intellectual submission. One respected energy expert has said that Mr Lovins is “about 60% pure genius and about 40% snake-oil salesman.” Another pundit puts it this way: “When Amory makes a prediction, don’t stand close and scrutinise the small print. Take a step back and see his broader vision, and you will find that he usually points the way forward as no one else can.”

Fine, but what about the specific criticism that any coming oil-price crash will completely undermine all efforts at forging a clean-energy revolution? That, after all, is what happened after the oil-price crash in the 1980s. Over a decade of low and stable oil prices pushed energy efficiency off the policy agenda, gas guzzlers and sport-utility vehicles proliferated and the average fuel-economy of new cars sold in America fell to a 20-year low. Mr Lovins thinks that will not happen again, thanks to two forces reshaping energy that even a price crash would not wipe out: the need to deal with climate change and the energy-security concerns of a post-September 11th 2001 world.

Adam Smith meets Rachel Carson

Furthermore, Mr Lovins thinks there other ways in which today's energy shock differs from the earlier shocks. One big difference between the Eighties and the Noughties, he says, is that "capital markets are a lot less gullible today." Another important difference is the rate of technological innovation. He is excited to see around 100 entrants from all over the world vying for the Automotive X Prize (a $10m scheme designed to reward the developers of clean, super-efficient cars), and counts nearly a dozen car firms working on radical designs today.

Mr Lovins is convinced that the "intensity and diversity of innovation attempts today is much greater than in the 1980s." One reason is that technology, be it in nanotech, batteries or computing, has improved. Another is that research itself is much more productive, in his view, thanks to the rise of open, networked and global approaches to innovation.

He sees one more reason for optimism about today's innovation boom. Unlike the last clean-tech wave, which was largely funded by government money doled out to politically connected groups, this wave is a largely "invisible" trend funded chiefly by private money coming from venture capitalists, angel investors and private-equity funds. That, he reckons, makes for more discerning investments and increases the odds of success.

Unlike many environmentalists, Mr Lovins has always had a respect for market forces and entrepreneurship. Markets are good at weeding out trendy but impractical technologies, for one thing. And he designed RMI to be not only a think-tank but a "do tank" that puts theory into practice. To do so, he has taken various of his ideas and formed start-up companies that have then been spun out of RMI.

Among these are Hypercar (which came up with a new design for a light, efficient car), Fiberforge (an offshoot of Hypercar which sells carbon-fibre parts to automotive suppliers) and Bright Automotive (which is developing technologies for plug-in hybrid cars, and is expected to be floated within a year). It has been nearly two decades coming, but the world's car industry is now embracing plug-ins, fuel cells, electric cars and lightweight bodies.

It is not just his enthusiasm for market forces that makes Mr Lovins, a man whose green credentials are impeccable, a most unlikely eco-warrior. He does not mind taking an infinitely long shower, he explains, if he uses renewable energy to heat his shower and recycles his waste water. Though it is fashionable to proclaim that sport-utility vehicles (SUVs) are the work of the devil, he made a point of designing his initial Hypercar as an SUV to show that the proper target for green ire was bad design, an inefficient engine and dirty fuel—not the SUV *per se*. He even rankles when he is called an environmentalist, insisting that he prefers "elegant frugality to wearing a hair shirt."

Surely it is frustrating to be ignored or pilloried for years, only to have his accusers co-opt his ideas? Mr Lovins smiles. "Yes, my ideas do sometimes have a slow burn of a decade or two before they catch on," he admits.

Though he is now 60, Mr Lovins shows no signs of slowing down. The Sage of Snowmass is still busy coming up with big new ideas, though if history is any guide, they will take a while to catch on. Watch this space—for ten to 20 years.

Offer to readers

Sep 4th 2008
From The Economist print edition

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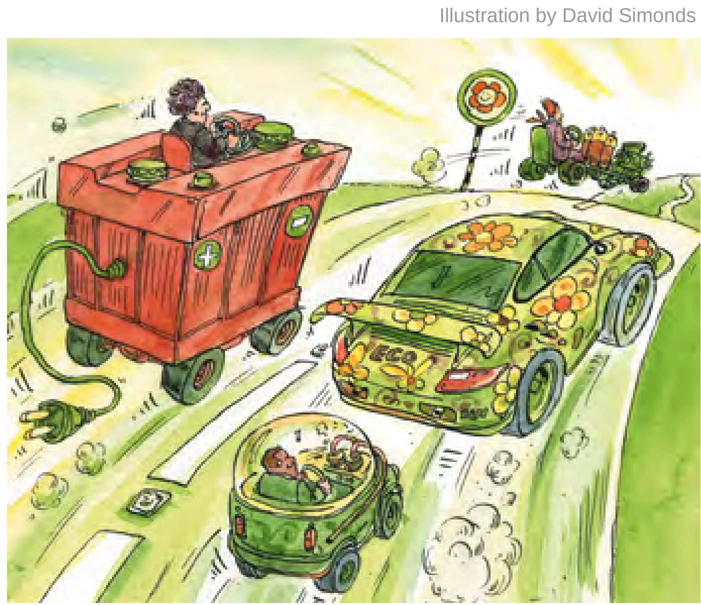
Cars

The road ahead

Sep 4th 2008
From The Economist print edition

The world's carmakers have mapped out their route to a greener future

Illustration by David Simonds



THERE is nothing like high oil prices, panic-selling of big cars and the prospect of swingeing new penalties on carbon-spewing vehicles to concentrate the minds of the world's carmakers. In less than two years something remarkable has happened. Technologies once regarded by horsepower-obsessed marketing departments as politically correct public-relations fluff, never likely to see the light of day, are entering the mainstream just as fast as the car firms can get them there.

Only 18 months ago it was common to hear Toyota's pioneering Prius hybrid joked about as a funny-looking niche vehicle with which Hollywood stars could painlessly flaunt their green credentials. Although General Motors (GM) had exhibited a plug-in hybrid concept car, called the Chevrolet Volt, early in 2007, hardly anyone took seriously the claim that it might reach production in 2010. And just ten months ago carmakers in America were lining up to lobby Congress against proposed legislation that would oblige them to achieve a fleet-average fuel consumption of 35 miles per gallon (mpg) by 2020. It simply could not be done, they wailed.

In Europe a similar campaign, with the German carmakers to the fore, was being waged against a plan by the European Commission to impose financial penalties by 2012 on companies if their fleets emitted, on average, over 130 grams of carbon dioxide per kilometre (g/km). It was, they said, technically impossible to comply with the new rules, which they saw as a wicked plot to emasculate a proud and successful industry.

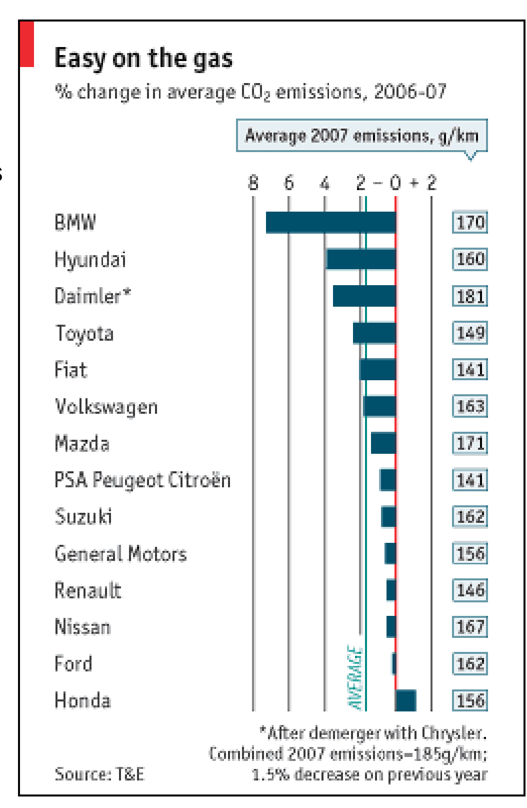
The grumbling about tighter emissions laws will continue, but spurred on by rocketing prices at the pump and changing customer preferences, the manufacturers have quietly got on with the job of transforming the fuel and CO_2 efficiencies of their vehicles. Moreover, the blue-sky thinking of the recent past which, encouraged by large government subsidies and conveniently elastic time horizons, appeared to favour the hydrogen fuel-cell, has been dumped for the practical and achievable. Although carmakers differ over the details of the coming revolution in efficiency, there is now a consensus across the industry about its thrust, and about both the role of the underlying technologies and when they will be on sale.

And they're off

The first stage, happening now, is an effort to wring efficiency from the internal-combustion engine. "It is important to recognise that there is not a single solution, and that the internal-combustion engine will continue to dominate for at least 20 years," says Jürgen Leohold, head of group research at Volkswagen (VW).

Lots can be done with today's technologies. On August 26th T&E, a Brussels think-tank that lobbies for greener transport, bestowed an unlikely accolade on BMW, which is synonymous with performance. According to T&E, BMW cut the average CO2 rating of its fleet by 7.3% last year, thanks to a suite of technologies, called "efficient dynamics", now used throughout its range. BMW's rate of improvement was four times the European average (see chart). Even Porsche, which makes sports cars and improbably rapid sport-utility vehicles (SUVs), has shown what can be done. The latest version of its 911 achieves a CO2 output of 225g/km—15% less than the previous model—despite an increase in power to 341bhp (brake horsepower). Jaguar Land Rover, another firm that makes big, thirsty SUVs and high-performance cars, thinks that by refining its powertrains it can lower emissions by around 25% over the next few years.

Makers of powerful vehicles may achieve the most spectacular improvements, partly because they have more scope and partly because their high-priced models can absorb the cost of technologies such as the dual-clutch gearbox and direct injection that Porsche uses. But volume producers will soon be making cars that crack 80mpg. The direction of travel for them is clear. Engines will become smaller and lighter, and will have clever new valve-control systems and superchargers to boost power. For example Fiat's new Multiair, which should be on sale in a year or so, uses hydraulics and electronics to optimise the engine's valve settings. When this combines with a supercharger or turbocharger, Fiat reckons, a "downsized" two-cylinder engine can be made to perform like a bigger four-cylinder one—though it will use some 20% less fuel.



The second stage of the journey will begin about two years from now. Despite his conviction that the internal-combustion engine will remain, VW's Mr Leohold concedes that the car industry needs to start moving away from mineral energy and towards electric-powered vehicles. After deriding Toyota's Prius for its complexity, expense and slightly dubious environmental benefits (on highways it is less efficient than powerful modern diesels), almost every carmaker is now planning hybrid powertrains of one kind or another within a few years. These are no longer seen as a niche market, but as central to the carmakers' survival. GM's Volt has gone from being an interesting sideshow to the model that could do more than any other to secure the ailing car giant's future.

Nearly all the coming hybrids are "plug-ins". That means their batteries can be recharged from an ordinary power socket. They will use industrial-strength versions of the lithium-ion batteries that power mobile phones and laptop computers, giving them greater staying power and performance than the older nickel-metal-hydride battery in today's Prius. Under pressure from car firms, the battery-makers have rapidly increased the energy density, robustness and stability of their products. The next generation of hybrids will be closer to all-electric vehicles than today's Prius: its petrol engine cuts in at speeds above about 10mph (16kph).

The carmakers disagree about which kind of hybrid technology is best. The familiar approach is the "parallel" hybrid in which an electric motor and an internal-combustion engine combine to improve fuel-efficiency and boost power. This is the system in Toyota's Synergy Drive, found in the Prius, and the "bi-mode" jointly developed by GM, Daimler and BMW to reduce the fuel consumption of their biggest vehicles. The electric motor is used at low speeds, and to give extra acceleration at higher speeds. VW has a variation, called Twin Drive, that reverses this idea, using the electric motors as the main propulsion, with a diesel engine to provide a boost when needed.

An alternative is the "series" hybrid, in which the internal-combustion engine does not drive the wheels directly, but runs at a constant, optimal speed, acting as a generator or "range extender" when the batteries have almost run out. This system, which GM calls E-Flex, will be in the Volt and, from 2011, in other GM cars. It should enable drivers to go 50 miles a day using electric power alone. As long as the car

is recharged overnight, the average commuter should rarely have to use its internal-combustion engine. Bob Lutz, GM's product supremo, reckons that within a decade E-Flex vehicles will be coming off the production lines at the rate of 1m a year. He says the battery pack, being developed for GM by CPI, a joint venture between LG and Continental, is “new core knowledge for the auto industry”.

Almost nobody disputes that hybrids are a bridging technology, however, and that eventually most cars will be powered by batteries alone. Given today's progress, by 2020 batteries should have a range of more than 200 miles—enough for the bulk of journeys. In short most carmakers think mainstream all-electric vehicles are still more than a decade away.

Bucking this consensus is the Renault-Nissan alliance. Encouraged by the fruits of its partnership with NEC, an electronics giant, Renault-Nissan wants to have all-electric cars ready for mass production by 2010. Renault will supply an all-electric Mégane to Better Place, a start-up that is building a network of 500,000 battery-charging points in Israel, and has similar plans in Denmark and Portugal. Nissan has promised to launch an electric car in America in 2010. It will have the performance of a V6 petrol engine, a range of 100 miles and should be capable of an 80% recharge in one hour, the company says.

Carlos Ghosn, who runs both Renault and Nissan, sees the chance to steal a march on slower rivals. Although he sidesteps the question of how the power for millions of electric vehicles would be generated, Mr Ghosn recently declared that “we must have zero-emission vehicles—nothing else will prevent the world from exploding.” The car industry now knows where it is going. The race is on to be the first to get there.

The world wide web

The second browser war

Sep 4th 2008 | SAN FRANCISCO
From The Economist print edition

Google's new web browser is its most direct attack on Microsoft yet

SEVERAL years ago, Silicon Valley was rife with rumours that Google, then primarily a search engine, might be building a new web browser to rival that of Microsoft, called Internet Explorer, or even an operating system to rival Microsoft's Windows. Google mocked those rumours and they died down. But if Sergey Brin, Google's co-founder, is to be believed, the speculation itself made him think that "maybe it's not a bad idea". And so this week Google did launch a new browser, called Chrome, that is also, in effect, a new operating system. The rumours, says Mr Brin cheekily, "just happened to migrate from being false to being true".



Chrome-plated

Chrome amounts to a declaration of war—albeit a pre-emptive one, in Google's mind—against Microsoft. So far, Google has been coy about admitting the rivalry (whereas Microsoft, especially its boss, Steve Ballmer, is obsessed with it). In web search and advertising, Google dominates—roughly as Microsoft does in operating systems and office applications. To the extent that Google has challenged Microsoft's core business, it is through Google Docs, its online word-processing, spreadsheet and presentation applications. But these, so far, have few users.

Google's fear has always been that Microsoft might use its grip on people's computers and browsers to tweak the default settings so that Google's search engine and other services were disadvantaged. This, after all, is how Microsoft behaved in the 1990s, when it crushed Netscape, an early pacesetter in the browser business.

Microsoft's fear, by contrast, has always been that computing might move from having the operating system as a platform for applications to running on the web (or "cloud"). This is why it attacked—also pre-emptively, in its mind—Netscape and landed in antitrust court.

As Google rose to dominate the web during this decade, it therefore invested a lot of energy in a rival web browser to Explorer, called Firefox. An open-source project (ie, one whose code can be altered by anybody), Firefox comes from a foundation, across the street from Google's offices, that happens to be based on the remnants of the old Netscape. Google's engineers contribute code to Firefox and pay the foundation a share of advertising when people search Google in the browser's toolbar. Thus Firefox rose to become the second-largest browser after Explorer, with almost 20% of the market.

But Google concluded that even Firefox could not protect it against Microsoft. It began to define its

business as “search, ads and apps”, where the apps, with a few exceptions, run on the web and are reached through a browser. So Google decided to build a browser from scratch, explicitly for those fledgling services, from word processing to snazzy virtual worlds.

Chrome, which it launched with an oh-so-Google comic book instead of a press release, is the result. It is based on tabs, each of which runs independently of the others for security, speed and stability. If one app goes down, it takes only that tab with it, not the whole browser or surfing session. Chrome even works offline. And with few menus and little visual clutter, it is simple.

This is, in short, the scenario that Microsoft has dreaded ever since Netscape. As Arnaud Weber, a Google engineer and one of the characters in the comic book, says in a speech bubble: “We’re applying the same kind of process isolation you find in modern operating systems.” It is a geek’s way of saying that developers and consumers may soon stop caring about the operating system on their own hard drive altogether.

Ingeniously, Chrome itself need not take a lot of market share to fulfil Google’s objectives. Google does not expect to sell or otherwise turn Chrome directly into money. Like Firefox’s, Chrome’s source code is free for anybody to change and improve, and even for rival browser-makers to incorporate. That could even include Microsoft. As Mr Brin says, “we would consider it a success” if the next version of IE were “built on Chrome, or even if it were just a lot better as a result of Chrome.” All Google wants is ever more people doing ever more things on the web—preferably using its own apps—and peace of mind that nobody can interrupt this. Not even Microsoft.

Alcatel-Lucent

Bring down the barriers

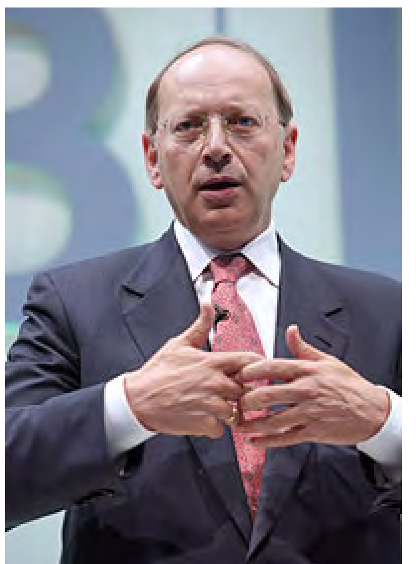
Sep 4th 2008
From The Economist print edition

Ben Verwaayen's talents will be sorely tested in his new role

AFTER Alcatel SA merged with Lucent Technologies Inc two years ago, almost the last thing the new company could afford to worry about was balancing the interests of its French and American parts. But although less than half of the combined group's turnover comes from its home countries, Alcatel-Lucent failed to transcend its national origins. Two small, weak telecoms-equipment firms became one big, weak one, beset by low-cost competition from new Chinese rivals and struggling in a business that internet technology was changing beyond recognition. Worse, demand has been weakening across the industry. Appointing people on the basis of nationality rather than ability is never a good idea; in conditions like these, it spelled disaster.

Cost savings either failed to materialise or were swallowed by falling prices; despite hacking 16,500 jobs from a workforce of 88,000, Alcatel-Lucent made losses for six consecutive quarters and its share price fell by more than half. At the end of July it said that Serge Tchuruk, its French chairman, and Patricia Russo, its American chief executive, would depart. This week their replacements were named: a French chairman, who lives in America, and a Dutch chief executive, who will be based in Paris. Both Philippe Camus and Ben Verwaayen have the personality and experience that could iron out the beleaguered telecoms group's problems.

Bloomberg



With Verwaayen, union at last?

Mr Camus is an intense, softly spoken French polymath who first made his name with Lagardère, a family-owned industrial group. He forged and then successfully ran EADS, a clumsy Franco-German defence and aerospace group, alongside a German colleague, despite the thicket of rivalries and jealousies that covered it. Only after Mr Camus was squeezed out by the machinations of Noël Forgeard, the boss of Airbus, EADS's civil-aviation subsidiary, did EADS and Airbus fall into the mess that still troubles them today.

After that he headed for New York and Florida to join an American investment firm, though he keeps one foot in Paris, as a managing partner of the Lagardère group. Mr Camus' experience managing the Franco-German rivalries at EADS and Airbus may help him steer Alcatel-Lucent away from its similar difficulties to become a proper global company.

For Mr Verwaayen, turning Alcatel-Lucent around will be an even taller order than his last trick—reviving BT. When he became chief executive in 2002, Britain's leading phone company was on its knees, losing business to nimbler rivals and sweating under debts of £30 billion ($45 billion). Mr Verwaayen soon cut costs and set the company back on the road to profits, after taking the bold decision to sell off its mobile business. He resigned this year, feeling that he had accomplished his task.

Mr Verwaayen accepted the new job only when he found he could get along with Mr Camus, who had already agreed to be chairman. "We share the same sense of humour," he says. "You need to have complete understanding at the top of the house." Mr Verwaayen is famed for his presentational skills, always speaking effortlessly without notes or slides. Subordinates find him hard going at first, because of his informal but direct manner and his love of argument. He wants his new colleagues to stop fretting about the merger and focus instead on securing its supposed benefits by meeting customers' future needs (for instance, with tailor-made services) rather than clinging to what worked in the past (simply covering the market with a wide range of hardware).

Before BT, the Dutchman—who is at ease in French as well as English—ran part of KPN, the Dutch phone company, and worked for Lucent in America. He reckons that his time as a customer will help him lead Alcatel-Lucent out of the shadows. He sees his job as removing barriers within the company and

unleashing its talents. But perhaps his biggest advantage in rescuing a failed Franco-American merger is that he is neither French nor American.

Dealing with the downturn

Accounts not receivable

Sep 4th 2008 | SAN FRANCISCO
From The Economist print edition

Companies are taking longer to pay one another

AS THE world economy slows, the number of people who have fallen behind on loan and credit-card payments is soaring. But although dud consumer loans have attracted much attention, individuals are not the only ones failing to pay on time. Firms are struggling too.

A recent survey of large public companies in America conducted by REL, a consultancy, and *CFO*, a sister title of *The Economist*, highlights this trend. It shows that “days’ sales outstanding” (DSO)—or the number of days it takes companies to collect money owed to them, often by other firms—hit an average of 41 in 2007, up from 39.7 in 2006. That might not seem a big increase, but the indicator has rarely risen or fallen by more than half a day a year. When America went into recession in 2001, DSO averaged 38.9.

In Europe and Asia average DSOs lie in the high 50s (credit terms tend to be easier than in America). They also rose a shade—and are likely to shoot up in 2008. On September 2nd the OECD forecast that Europe’s big economies would be “broadly flat” in the second half of the year. As sales stagnate, firms will delay paying suppliers for as long as they can.

Chaos in the banking system is also causing managers to think twice about paying promptly. “The biggest issue that companies are having is that banks are curtailing credit lines,” notes Lyle Wallis of the Credit Research Foundation, which studies business-to-business credit trends in America. By putting off payments to creditors, treasurers can conserve cash and thus reduce their reliance on nervous bankers.

All this puts in-house debt-collection teams in a delicate position. A hard line with delinquent debtors risks alienating customers temporarily lacking cash. But if they are too soft, their own companies may run short. Most are taking a firm approach. In Britain the number of county-court cases involving companies chasing overdue debts has risen sharply in the past year or so, according to the Credit Management Research Centre at Leeds University Business School.

To help get their money, firms are calling in specialist collection agencies soon after debts turn sour. “We are definitely getting cases earlier,” says Fred Sampliner, the boss of S.S. Sampliner, a New York agency. Mr Sampliner and his fellow commercial-debt collectors are likely to be busy.

Executive compensation in China

False options

Sep 4th 2008 | HONG KONG
From The Economist print edition

A study of share options reveals a vast amount of untouched wealth

HOW executives are rewarded is one of the many mysteries of China's increasingly powerful companies. Unravelling it is important, not least because it should help to explain corporate China's transformation from a state-controlled to a consumer-driven creature.

Research on this question has been surprisingly sparse. A new study by Zhihong Chen and Yuyan Guan, of the City University of Hong Kong, and Bin Ke, of Pennsylvania State University, casts a rare beam of light. However, its main achievement is to reveal how little is understood about the incentive structure of Chinese business.

The authors examine "red chips"—companies operating in China but incorporated abroad and listed in Hong Kong. For many years this was the main way in which big Chinese companies interacted with the capital markets. The 83 mostly state-controlled companies covered by the study's final year of data, 2005, account for more than half of the stockmarket value of all Chinese firms and more than one-third of the capitalisation of the Hong Kong Stock Exchange.

Senior executives' cash pay was low by global standards: $180,000 a year on average. Almost every firm awarded stock options, worth an average of $140,000, giving bosses healthy top-ups as well as equity stakes—if those options were exercised. Remarkably, a lot never were. At more than half of the firms, no options were exercised within four years of vesting.

Share options are intended to address one of the great schisms in the structure of publicly owned companies: the divergent interests of managers and owners. In developed markets, especially America, share options have been used a lot—but it is not at all clear that they have worked as intended. Clever consultants, whose immediate incentive is to please managers rather than shareholders, have devised ingenious compensation schemes allowing bosses to reap handsome rewards even if they foul things up. Among the deposed chief executives of both Wall Street and Main Street there are plenty of examples.

In America researchers have been looking into why these schemes were so skewed. They have been aided by a wealth of data and a fair understanding of the underlying incentives. The merits of stock options elsewhere have received little attention. In China they would seem to be a good way of fostering the profit incentive, and there is evidence that they have been used since 1990. But the study questions the point of this. "If executives in general do not exercise stock options, how can the option scheme align executives with the interest in shareholders?" asks Mr Chen. "What forces make them throw away money on the table?"

There are many possible reasons. Cultural pressure may explain why bosses do not want visible income. Companies may meet the cost of cars, housing and school fees in other ways. And state-controlled companies' bosses may be compensated in a different fashion. Executives' tenure at red-chip companies is brief: only three years, against five at big Western firms. Managers who do a good job are often "promoted" from one company to another by the largest shareholder—the state. Their rewards are more opaque than salary and options, and could even be imperilled by overt signs of affluence. All Mr Chen and his colleagues can conclude is that there is ample room for further study.

Face value

Deflating IT

Sep 4th 2008
From The Economist print edition

The chief executive of AdventNet, Sridhar Vembu, has a shot at becoming software's Michael Dell

Adventnet



SRIDHAR VEMBU is a dangerous man. If he succeeds, a lot of people will lose a lot of money: software developers, consultants, shareholders and others. The chief executive of AdventNet does not have fraud in mind. Instead, he wants to remove what he calls the "value-pad" from corporate IT in general and business software in particular: all those millions of dollars he thinks are wasted on inefficient production structures, marketing and, not least, proprietary standards. "In the world of corporate IT", he says, "the low-cost revolution is very much unfinished business."

Mr Vembu may have only a fighting chance at becoming software's answer to Michael Dell, who commoditised much of IT's hardware business. With revenues of $60m a year and about 900 employees, his firm accounts for a drop in the $3.4 trillion ocean that Gartner, a consultancy, thinks companies will spend on IT this year. And the products he expects to disrupt the IT market, a suite of online offerings for small businesses, have yet to earn much money despite a respectable 1m registered users. Still, his ambitions for Zoho, as he calls the suite, may mark the beginning of the end of the fat years for big Western IT firms, especially the sellers of software.

The 40-year-old electrical engineer was not destined to be disruptive. Equipped with a degree from the Indian Institute of Technology Madras in Chennai, one of the country's top engineering schools, he set out for a career as an academic. But at Princeton University, where he enrolled in 1989, he became annoyed by "the paper-shoving and the tenure-chasing". After getting his PhD in 1994, he instead joined Qualcomm, a hotbed in America for wireless technology, and then headed for Silicon Valley. This was the place to be to take advantage of an extraordinary opportunity: "I was convinced that something big was about to happen with software in India," he explains. "I wanted to be part of it."

Even today, many would disagree with those words. India's IT firms may be excellent at producing custom code and maintaining computer systems. But many have long held it to be much less good at coming up with programs that can be sold. In the mid-1990s venture capitalists gave Mr Vembu the cold shoulder when he shopped around a business plan for software that helped to manage telecoms networks.

This rejection, says Mr Vembu, led him to do the right thing: be frugal and stay independent. When they set up the firm in 1996 he and his five co-founders had to use their own money. Having no cash to waste—unlike so many others in those giddy times—they based AdventNet in Pleasanton, an hour's drive east of Silicon Valley and much cheaper. Even today it has only a dozen employees there; the rest are in Chennai. Such penny-pinching allowed the company to survive when the telecoms bubble burst in 2001.

With no outside investors, AdventNet could switch to a different business. Venture capitalists would probably have killed off a few of the 18 web-based applications that AdventNet has since come up with under the Zoho name. Several are essentially interchangeable with services that are already offered by Google, the online giant, and will be by Microsoft, its main competitor.

Yet Zoho is no mere clone of Google's applications. It is the most comprehensive suite of web-based programmes for small businesses, including even services to keep track of a firm's employees and its customers. What is more, although Mr Vembu does not want to earn money with advertisements, he wants to keep prices for business customers rock-bottom. Zoho's application for customer relationship management (CRM), for instance, starts at $12 per corporate user per month.

If Mr Vembu still expects to make money, it is because of his firm's frugal ways. This has little to do with low Indian wages: these are rising quickly, and most Western software firms also do much development in India. More importantly, he says, Zoho's software and data centres are built for efficiency. The firm spends a pittance on marketing. And it uses free technology developed by others wherever possible. Its subscribers can, for instance, use Google's authentication service to sign on to Zoho.

In the land of the giants

But before AdventNet can shake up corporate IT, it will have to watch out that bigger competitors do not squash it. Mr Vembu says that although Salesforce.com, the market leader in online CRM, has done much to popularise web applications, it is still more of a traditional software vendor with huge sales and marketing expenses. Microsoft, having grown up making money selling traditional software, will have a hard time being successful online, he argues. He thinks Google is unlikely to invest much in enterprise applications, because profit per employee is much lower than in its advertisement-financed consumer business.

In a business with high prices and relatively thin rewards it is not obvious how Zoho will win by being cheap, at least with larger customers. Costs are high for a reason. Enterprise applications are complex beasts; they require programmers who know about business; and they are expensive. Customers must be convinced that they can entrust their business to the software. And they need a lot of hand-holding, both in implementing and in running programs. But Mr Vembu is unfazed: "We've heard this before from the likes of Digital Equipment and Sun Microsystems. But look what Dell did to them."

Mr Vembu may be too frugal for his own good. Enterprise software is more than just code: it is an entire ecosystem, which will not disappear soon. Yet the incumbents have no reason to relax. Sooner or later, Zoho or another emerging-economy upstart will let a lot of air out of the corporate IT balloon. At least in their home countries, they should be very successful. And at some point firms in the rich world will ask whether they are paying too much. As Mr Vembu puts it: "The India or China price will effectively become the world price."

Correction: The business of sport

Sep 4th 2008
From The Economist print edition

A table in our special report on sport ("Fun, games and money", August 2nd) put the value of Fiat's three-year sponsorship of Juventus, an Italian football club, at $134m. The correct figure is $46.8m. Apologies.

Islamic finance

Savings and souls

Sep 4th 2008 | MANAMA
From The Economist print edition

Muslims have a lot of money to invest. But it is a constant struggle to reconcile faith and finance

Gillian Blease



TO SEE Islamic finance in action, visit the mutating coastline of the Gulf. Diggers claw sand out of the sea off Manama, Bahrain's capital, for a series of waterfront developments that are part-funded by Islamic instruments. To the east, Nakheel, a developer that issued the world's largest Islamic bond (or *sukuk*) in 2006, is using the money to reorganise the shoreline of Dubai into a mosaic of man-made islands.

Finance is undertaking some Islamic construction of its own. Islamic banks are opening their doors across the Gulf and a new platform for *sharia*-compliant hedge funds has attracted names such as BlackRock. Western law firms and banks, always quick to sniff out new business, are beefing up their Islamic-finance teams.

Governments are taking notice too. In July Indonesia, the most populous Muslim country, said it would issue the nation's first *sukuk*. The British government, which covets a position as the West's leading centre for Islamic finance, is also edging towards issuing a short-term sovereign *sukuk*. France has begun its own charm offensive aimed at Islamic investors.

Set against ailing Western markets such vigour looks impressive. The oil-fuelled liquidity that has pumped up Middle Eastern sovereign-wealth funds is also buoying demand for Islamic finance. Compared with the ethics of some American subprime lending, Islamic finance seems virtuous as well as vigorous. It frowns on speculation and applauds risk-sharing, even if some wonder whether the industry is really doing anything more than mimicking conventional finance and, more profoundly, if it is strictly necessary under Islam (see article).

Sukuks in the souk

As the buzz around the industry grows, so do expectations. The amount of Islamic assets under management stands at around $700 billion, according to the Islamic Financial Services Board, an industry body. Standard & Poor's, a rating agency, thinks that the industry could control $4 trillion of assets. Others go further, pointing out that Muslims account for 20% of the world's population, but Islamic finance for less than 1% of its financial instruments—that gap, they say, represents a big opportunity. With tongue partly in cheek, some say that Islamic finance should by rights displace conventional finance altogether. Western finance cannot service capital that wants to find a *sharia*-

compliant home; but Islamic finance can satisfy everyone.

Confidence is one thing, hyperbole another. The industry remains minute on many measures: its total assets roughly match those of Lloyds TSB, Britain's fifth-largest bank (though some firms that meet *sharia*-compliant criteria may attract Islamic investors without realising it). The assets managed by Islamic rules are growing at 10-15% annually—not to be sniffed at, but underwhelming for an industry that attracts so much attention. Most of all, the industry's expansion is tempered by its need to address the tensions between its two purposes: to serve God and to make as much money as it can.

That is a stiff test. A few devout Muslims, many of them in Saudi Arabia, will pay what Paul Homsy of Crescent Asset Management calls a "piety premium" to satisfy *sharia*. But research into the investment preferences of Muslims shows that most of them want products that benefit their savings, as well as their souls—rather as ethical investors in the West want funds that do no harm, but are also at least as profitable as other investments.

A combination of ingenuity and persistence has enabled Islamic finance to conquer some of the main obstacles. Take transaction costs which tend to be higher in complex Islamic instruments than in more straightforward conventional ones. *Sharia*-compliant mortgages are typically structured so that the lender itself buys the property and then leases it out to the borrower at a price that combines a rental charge and a capital payment. At the end of the mortgage term, when the price of the property has been fully repaid, the house is transferred to the borrower. That additional complexity does not just add to the direct costs of the transaction, but can also fall foul of legal hurdles. Since the property changes hands twice in the transaction, an Islamic mortgage is theoretically liable to double stamp duty. Britain ironed out this kink in 2003 but it remains one of the few countries to have done so.

However, just as in conventional finance, as more transactions take place the economies of scale mean that the cost of each one rapidly falls. Financiers can recycle documentation rather than drawing it up from scratch. The contracts they now use for *sharia*-compliant mortgages in America draw on templates originally drafted at great cost for aircraft leases.

Islamic financiers can also streamline their processes. When Barclays Capital and Shariah Capital, a consultancy, developed the new hedge-fund platform, they had to screen the funds' portfolios to make sure that the shares they pick are *sharia*-compliant. That sounds as if it should be an additional cost, but prime brokers already screen hedge funds to make sure that risk concentrations do not build up. The checks they make for their Islamic hedge funds can piggyback on the checks they make for their conventional hedge funds.

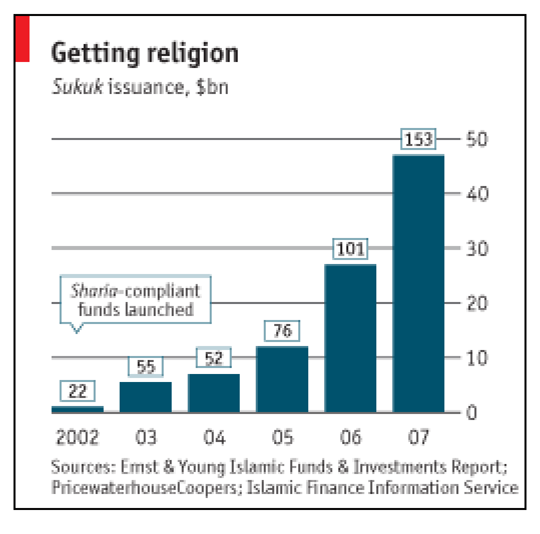
Mohammed Amin of PricewaterhouseCoopers, a consulting firm, says the extra transaction costs for a commonly used Islamic financing instrument, called commodity *murabaha*, total about $50 for every $1m of business. That is small enough to be recouped through efficiencies in other areas, or to be absorbed in lenders' profit margins. In addition, bankers privately admit that less competition helps keep margins higher than in conventional finance. "Conceptually, Islamic finance should cost more, as it involves more transactions," says Mr Amin. "The actual cost is tiny and can be lost in the wash."

The other area of substantive development has been in redefining *sharia*-compliance. New products require scholars to cast *sharia* in fresh, and occasionally uncomfortable, directions. Some investors express surprise at the very idea of Islamic hedge funds, for example, because of prohibitions in *sharia* on selling something that an investor does not actually own.

"You encounter a wall of scepticism whenever you do something new," says Eric Meyer of Shariah Capital. "It is no different in Islamic finance." He says that it took eight long years to bring his idea of an Islamic hedge-fund platform to fruition, applying a technique called *arboon* to ensure that investors, in effect, take an equity position in shares before they sell them short. Industry insiders describe an iterative process, in which scholars, lawyers and bankers work together to understand new instruments and adapt them to the requirements of *sharia*.

Differences in interpretation of *sharia* between countries can still hinder the economies of scale. Moreover, the scholars can sometimes push back. Earlier this year, the chairman of the Accounting and Auditing Organisation for Islamic Financial Institutions (AAOIFI), an industry body, excited controversy by criticising a common form of *sukuk* issuance that guarantees the price at which the issuer will buy back the asset underpinning the

transaction, thereby enabling investors' capital to be repaid. Such behaviour contravened an AAOIFI standard demanding that assets be bought back at market prices, in line with the *sharia* principle of risk-sharing. The *sukuk* market has enjoyed years of rapid growth (see chart), but early signs are that the AAOIFI judgment has dented demand.



Although Islamic finance has done well to reduce its costs and broaden its product range, it has yet to clear plenty of other hurdles. Scholars are the industry's central figures, but recognised ones are in short supply. A small cadre of 15-20 scholars repeatedly crops up on the boards of Islamic banks that do international business. That partly reflects the role, which demands a knowledge of Islamic law and Western finance, as well as fluency in Arabic and English. It also reflects the comfort that this handful of recognised names brings to investors and customers.

There are plenty of initiatives to nurture more scholars but for the moment, the stars are pressed for time. That can be a problem when banks are chasing their verdict on bespoke transactions. It takes a scholar about a day to wade through the documentation connected with a *sukuk* issue, for example. But scholars are not always immediately available. "You've got to have the scholar's number programmed into your mobile phone and be able to get hold of them," says a banker in the Gulf. "That is real competitive advantage."

Assets are another bottleneck. The ban on speculation means that Islamic transactions must be based on tangible assets, such as commodities, buildings or land. Observers say that exotic derivatives in intangibles such as weather or terrorism risk could not have an Islamic equivalent. But in the Middle East, at least, the supply of assets is limited. "Lots of companies in the Gulf are young and don't have assets such as buildings to use in transactions," says Geert Bossuyt of Deutsche Bank. This limits the scope for securitisation, a modern financing technique that is backed by assets and is thus seen by *sharia* scholars as authentically Islamic. There are not enough properties to bundle into securities.

Governments have more assets to play with. The Indonesians have approved the use of up to $2 billion of property owned by the finance ministry in their planned *sukuk* issuance later this year. But oil-rich governments in the Gulf have little need to issue debt when they are flush with cash. That is a problem. Sovereign debt would establish benchmarks off which other issues can be priced. It would also add to the depth of the market, which would help solve another difficulty: liquidity.

It may seem odd to worry about liquidity when lots of Muslim countries are flush with cash, but many in Islamic finance put liquidity at the top of their watchlist. The chief concern is the mismatch between the duration of banks' liabilities and their assets. The banks struggle to raise long-term debt. In a youthful industry, their credit histories are often limited; they also lack the sort of inventory of assets that corporate *sukuk* issuers have.

Desert liquidity

As a result, Islamic banks depend on short-term deposit funding, which, as Western banks know all too well, can disappear very rapidly. "Lots of assets are generally of longer term than most deposits," says Khairul Nizam of AAOIFI. "Banks have to manage this funding gap carefully." If there were a liquidity freeze like the one that struck Western banks a year ago, insiders say that the damage among Islamic banks would be greater.

Gillian Blease

There are initiatives to develop a *sharia*-compliant repo market but for the time being the banks have only limited scope for getting hold of money fast. Loans and investments roll over slowly. The lack of *sharia*-compliant assets and a tendency for Islamic investors to buy and hold their investments have stunted the secondary market. The shortest-term money-management instruments available today are inflexible. Cash reserves are high, but inefficient. Western banks with Islamic finance units, or "windows", are just as troubled by tight liquidity as purely Islamic institutions are: their *sharia*-compliant status requires

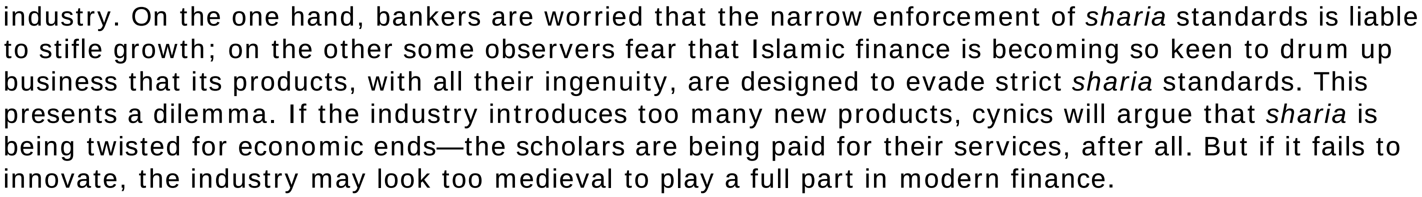
them to hold assets and raise funds separately from their parent banks.



There are other sources of danger, too. Because Islamic banks face constraints on the availability and type of instruments they can invest in, their balance-sheets may concentrate risk more than those of conventional banks do. The industry's ability to steer its way through stormy waters is largely untested, although Malaysian banks do have memories of the Asian financial crisis in the 1990s to draw on.

None of these tensions need derail the growth of Islamic finance just yet. There is plenty of demand, whether from oil-rich investors, the faithful Muslim minorities in Western countries or the emerging middle classes in Muslim ones. There is lots of supply, in the form of infrastructure projects that need to be financed, Western borrowers looking for capital and ambitious rulers eager to set up their own Islamic-finance hubs. The industry is innovative; new products keep expanding the range of *sharia*-compliant instruments. And as in conventional finance, the economics of the Islamic kind improve as it gains scale.

But further growth itself contains a threat. The AAOIFI ruling on *sukuk* earlier this year neatly captured the contradictory pressures on the industry. On the one hand, bankers are worried that the narrow enforcement of *sharia* standards is liable to stifle growth; on the other some observers fear that Islamic finance is becoming so keen to drum up business that its products, with all their ingenuity, are designed to evade strict *sharia* standards. This presents a dilemma. If the industry introduces too many new products, cynics will argue that *sharia* is being twisted for economic ends—the scholars are being paid for their services, after all. But if it fails to innovate, the industry may look too medieval to play a full part in modern finance.



Balancing these imperatives will become even harder as competition grows fiercer. Anouar Hassoune of Moody's, a credit-rating agency, believes that unscrupulous newcomers could harm the reputation of the entire industry, "like the space shuttle undone by something the size of a 50 cent coin". Islamic finance serves two masters: faith and economics. The success of the industry depends on satisfying both, even if the price of that is a bit more inefficiency and a bit less growth.



A short introduction

Faith-based finance

Sep 4th 2008
From The Economist print edition

The whys and wherefores of Islamic finance

THE modern history of Islamic finance is often dated to the 1970s, with the launch of Islamic banks in Saudi Arabia and the United Arab Emirates. But its roots stretch back 14 centuries. Islamic finance rests on the application of Islamic law, or *sharia*, whose primary sources are the Koran and the sayings of the Prophet Muhammad. *Sharia* emphasises justice and partnership. In the world of finance that translates into a ban on speculation (or *gharar*) and on the charging of interest (*riba*). The idea of a lender levying a straight interest charge, regardless of how the underlying assets fare in an uncertain world, offends against these principles—though some Muslims dispute this, arguing that the literature in *sharia* covering business practices is small and that terms such as “usury” and “speculation” are open to interpretation.

Companies that operate in immoral industries, such as gambling or pornography, are also out of bounds, as are companies that have too much borrowing (typically defined as having debt totalling more than 33% of the firm’s stockmarket value). Such criteria mean that *sharia*-compliant investors steer clear of highly leveraged conventional banks, a wise choice in recent months.

Despite these prohibitions, Islamic financiers are confident that they can create their own versions of the important bits of conventional finance. The judgment of what is and is not allowed under *sharia* is made by boards of scholars, many of whom act as a kind of spiritual rating agency, working closely with lawyers and bankers to create instruments and structure transactions that meet the needs of the market without offending the requirements of their faith.

Non-Muslims may find the distinctions between conventional finance and Islamic finance a trifle contrived. An options contract to buy a security at a set price at a date three months hence is frowned upon as speculation. A contract to buy the same security at the same price, with 5% of the payment taken upfront and the balance taken in three months upon delivery, is *sharia*-compliant. Then again, winning over non-Muslims is not really the point.

There is no ultimate authority for *sharia* compliance. Some worry that this may hold the industry back. Malaysia has tackled this by creating a national *sharia* board. Some industry bodies, notably the Accounting and Auditing Organisation for Islamic Financial Institutions (AAOIFI) in Bahrain, are working towards common standards. That a few scholars dominate the boards of the big international institutions also helps create consistency. But differences between national jurisdictions—between pious Saudi Arabia and more liberal Malaysia, say, are likely to remain.

League of nations
Sharia-compliant assets, 2007, $bn

	Assets
Iran	154.6
Saudi Arabia	69.4
Malaysia	65.1
Kuwait	37.7
United Arab Emirates	35.4
Brunei	31.5
Bahrain	26.3
Pakistan	15.9
Lebanon	14.3
Britain	10.4

Source: *The Banker*

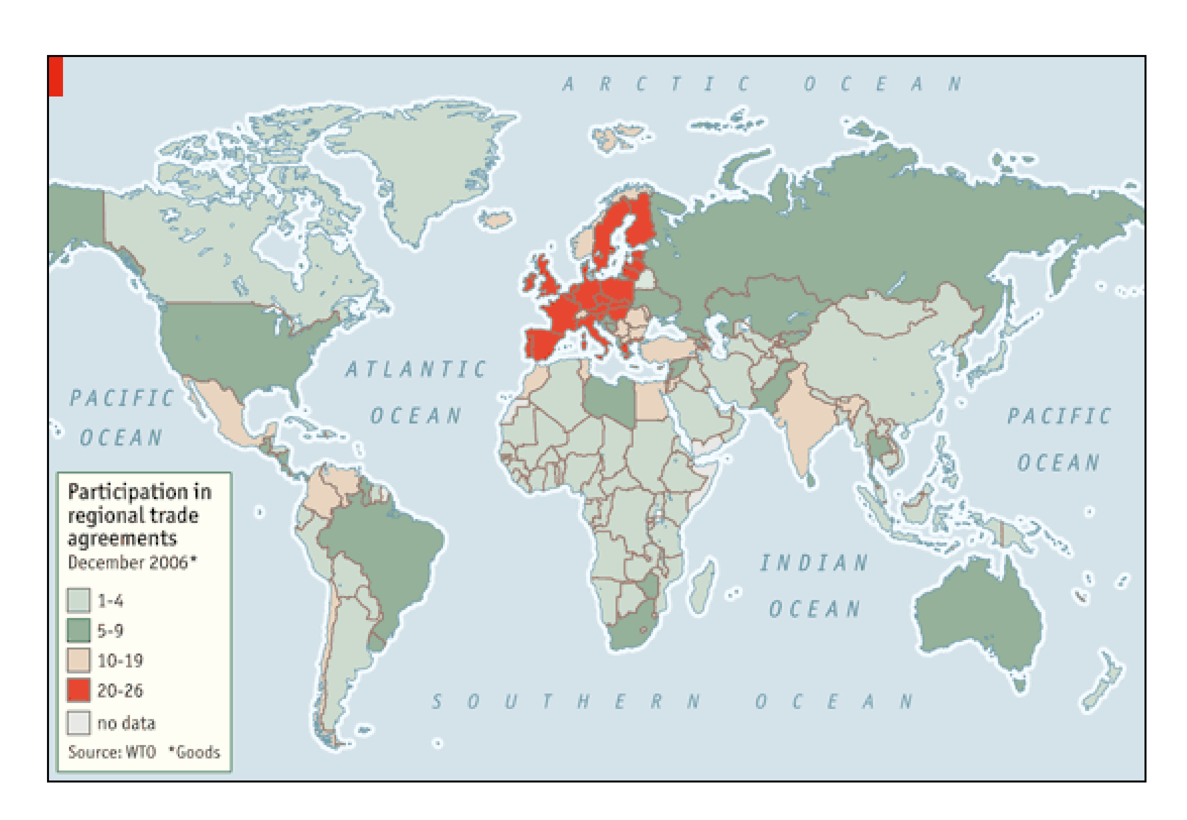
Both of these countries feature in the top three markets for Islamic finance, measured by the quantity of *sharia*-compliant assets (see table). Top is Iran, although international sanctions keep its industry isolated. The Gulf states, awash with liquidity and with a roster of huge infrastructure projects to finance, are the most dynamic markets. Britain is the most developed Western centre, although France, with a much larger Muslim population, wants to close the gap.

Trade

Afta Doha

Sep 4th 2008 | DELHI
From The Economist print edition

Should free traders applaud the rise of preferential trade deals?



CONTEMPLATING the failure of the Doha round of multilateral trade talks, which collapsed in Geneva in July, Peter Mandelson, trade commissioner of the European Union (EU), predicted that by the time the talks resumed, “the caravans will have moved on elsewhere.” On August 28th they trundled through Singapore. The ten members of the Association of South-East Asian Nations (ASEAN) agreed on a trade deal with India and reached a separate accord with Australia and New Zealand. Together, the agreements cover trade worth about $70 billion in 2006.

After the Geneva disappointment, some free traders find consolation in the success of bilateral and regional deals, such as those agreed on in Singapore. Since the Doha round was launched almost seven years ago, over 100 such deals have come into force, lowering tariffs for some members of the World Trade Organisation (WTO) but not others (see map).

These preferential deals violate the principle of “most-favoured nation” (MFN), which holds that any favour offered to one member must be offered to all. But that principle now has few defenders in the world’s trade ministries. In his new book, “Termites in the Trading System”, Jagdish Bhagwati of Columbia University points out that negotiators see any deal as a “feather in your cap”. But economists know better. By playing favourites with its trading partners, a country can dupe itself into paying more for its imports. Its consumers may switch from a low-cost supplier to a more expensive one, only because the new supplier can sell its goods duty-free and the other cannot. The consumer pays less, but the Treasury is deprived of tariff revenue. Thus discriminatory trade deals do not just hurt those left out.

ASEAN, however, seems a compelling advertisement for regionalism. Its members (which include Indonesia, Malaysia, the Philippines, Thailand and Vietnam) have only 3% of the world’s land area but 11% of its coastline, which extends for 173,000 kilometres around the region’s peninsulas and archipelagos. ASEAN’s prosperity depends on trade: its ratio of exports to GDP is almost 70%.

The group’s economic geography is as spectacular as its topography. Elaborate networks of production

span the region and extend to China, Japan and South Korea. Much of the region's trade is in parts (such as car components) and tasks (such as assembly) rather than finished goods. It has become part of what Richard Baldwin, of the Graduate Institute of International Studies in Geneva, calls "Factory Asia".

Some of this success may be due to the ASEAN Free-Trade Area (AFTA), which has cut barriers between members and attracted foreign direct investment. But Factory Asia also demonstrates the flaws of such agreements. If a country wants to grant favours to one trading partner but not all, it has to write complex "rules of origin" to establish the nationality of a product.

But in a dense network of production, every product is a mongrel, with an indecipherable pedigree. In recognition of this, AFTA's rules of origin are quite relaxed: a good qualifies even if only 40% of its value was added in the region, and that 40% can come from more than one member.

Even so, ASEAN's success owes more to ambitious cuts in its MFN tariffs, which it applies to everybody. Thailand, for example, slashed its average tariff from 41% in 1989 to 18% in 2000; Indonesia cut from 25% to 8%. If the MFN tariff is low enough, exporters will pay up rather than trouble themselves with documenting the origin of their products. Only 5% of ASEAN trade takes advantage of the preferences its officials so painstakingly negotiated.

If multilateral liberalisation were proceeding apace, firms everywhere could bypass the thicket of preferential agreements, just as South-East Asian companies have bypassed AFTA. But do such accords help or hinder the cause of full liberalisation?

Mr Bhagwati insists that they hinder it. One of the stumbling blocks in the Doha round, for example, was "preference erosion". Some African and Caribbean countries did not want to see the EU open its banana market to all and sundry, because that would erode the value of their privileges. (This issue was reportedly resolved at the Geneva summit in July.)

Sometimes it is the countries granting the privileges that want to preserve their worth. America, for example, offers trade deals to strategic allies as a reward for fighting the war on drugs or stabilising the Middle East. Nuno Limão, of the University of Maryland, has shown that in the last global trade round America was slower to cut MFN tariffs wherever that would remove a plum from its allies' mouths.

But not all of the evidence is as gloomy. A new study, by Antoni Estevadeordal of the Inter-American Development Bank, Caroline Freund of the World Bank and Emanuel Ornelas of the London School of Economics, reaches a more optimistic conclusion. Looking at ten Latin American countries in the 1990s, they show that preferential cuts in a tariff were often followed by multilateral cuts in the same tariffs.

This may be the result of what Mr Baldwin calls the "juggernaut effect". A trade deal, even a discriminatory one, should enlarge a country's export sector and shrink domestic industries vulnerable to foreign competition. This will, in turn, change the country's politics, strengthening the "mercantilist" lobby, which demands open markets overseas, and weakening the country's protectionist constituencies. If the export lobby gets its way, freer trade will follow, further strengthening the mercantilists at the expense of the protectionists. The juggernaut, Mr Baldwin writes, is slow to start rolling, but hard to stop.

Will India's ASEAN deal get the juggernaut rolling in India? Unfortunately, the agreement protected 489 politically sensitive items, mostly agricultural products. The deal thus gives India's exporters a little of what they want, reducing their incentive to fight for a Doha round. But it still leaves the country's farmers with every reason to resist a return to Geneva.

The word "juggernaut", Mr Baldwin notes, has an Indian origin: it is a British mispronunciation of the Hindu deity, *Jagannath*. Each year, the deity is worshipped in a garlanded chariot, pulled through the streets by pilgrims. The caravans may be moving as Mr Mandelson predicted. Unfortunately, India's free-trade chariot seems stuck somewhere between Singapore and Switzerland.

Buttonwood

A leaky pool

Sep 4th 2008
From The Economist print edition

The problems of insuring against systemic risk

Illustration by S. Kambayashi



IT IS a simple but brilliant idea. Pooling risks—the essence of insurance—allows people and businesses to protect themselves from disaster. The insured have the incentive to buy homes or build business, knowing that they will be saved from the worst outcome. That enables the economy to grow faster and everyone to enjoy a higher standard of living.

But one assumption is crucial. The pool of risks must be genuinely diversified, so that only a small proportion of policyholders will be making claims at any one time. If not, then the insurer could go bankrupt.

When it comes to insuring whole industries, that is a problem. In America bank deposits and company pensions are protected through sector-wide schemes, funded by a levy on those that participate. The problem, as the Federal Deposit Insurance Corporation (FDIC) and the Pension Benefit Guarantee Corporation (PBGC) have found, is that banks and pension funds engage in herd-like behaviour.

Banks compete in similar lines of business, lending against commercial or residential property or (in the late 1970s) channelling money to developing nations. That other banks are doing the same thing tends to breed confidence, rather than caution. Indeed, executives may come under pressure if they are losing market share in a popular area. When banks lend money so that people can buy assets, the prices of those assets rise; in turn, that makes the banks more confident about their original lending decision. As a result when the market turns, a lot of banks can have similar problems.

Pension funds tend to invest a large part of their portfolios in domestic equities—in other words, in other companies that are members of the insurance scheme. When stockmarkets fall, the assets of all pension funds decline together. Worse still, investors then tend to switch into government bonds, pushing down yields. Thanks to the discounting mechanism, that raises the present value of the funds' liabilities. The industry can switch from massive surplus to massive deficit within a few months.

A further problem, that applies especially to the banks, is moral hazard. If deposits are insured, there is little incentive for a bank's customer to assess its creditworthiness and every incentive to take the highest rate on offer. In other markets, a higher rate would imply higher risk. In turn, that may force bank executives to take more risk in order to earn back what they are paying depositors; after all, the insurance scheme will pick up the tab if things go wrong. Dealing with that danger requires a complex system for regulating the banks, and even then, bankers may outwit the regulators.

These problems can be very slow to emerge and you could argue that deposit insurance has worked brilliantly in America for 70 years. Nevertheless, as it faces its latest test, the system looks fragile. The FDIC had $45.2 billion in its fund at the end of the second quarter. That compares with $78.3 billion of assets in the 117 "problem banks" it has identified. More worryingly, it represents only a little over 1% of the more than $4 trillion of insured deposits in America. This is not much of a cushion against a system-wide problem.

The FDIC can raise more money from its member banks. But what is the best way of doing so? If it charges all banks equally, the prudent end up subsidising the reckless. However, a risk-based levy might prove an intolerable burden for an already-troubled bank.

Over at the PBGC, the 2007 accounts appeared to reveal a healthier position, with a reduced deficit of $13

billion. But that was when equity markets were relatively robust; this year's falls will have driven the deficit sharply wider again. The collapse of a big car company would provide a huge test.

Taxpayers in effect stand behind such schemes, just as they eventually had to stand behind America's savings and loan industry. But a government bail-out would surely weaken confidence in America's financial system, especially as the government is also trying to stabilise the housing market and has an unspecified commitment to support the country's investment banks.

Unsurprisingly deposit- and pension-insurance schemes tend to be popular, given the harm to losers when banks and retirement funds fail. The example of the 1930s, when a lack of public confidence in the banks contributed to the Depression, is impossible to forget.

But such schemes may breed a degree of complacency that there will always be someone else around to fix any problems. The costs of that complacency are now becoming clear.

Economist.com FINANCE & ECONOMICS

Japan's economy

Down but not out

Sep 4th 2008 | HONG KONG
From The Economist print edition

Japan could yet outperform the other big rich economies over the next year

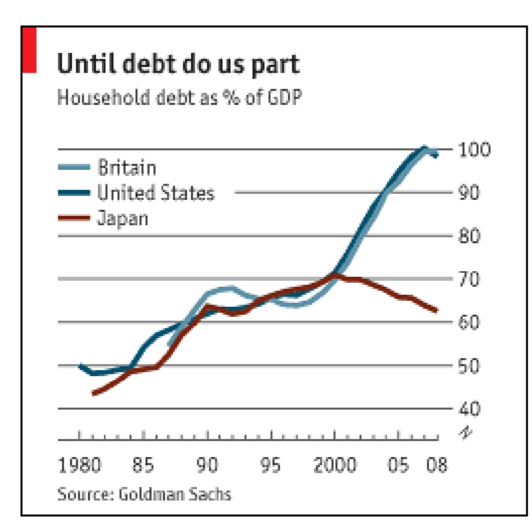
THE surprise resignation of Japan's prime minister, Yasuo Fukuda, has once again left the world's second-largest economy rudderless—just as it seems to be drifting dangerously towards the rocks. Although America is the centre of the world's financial troubles, Japan's economy appears to have been hit harder: its GDP fell sharply in the second quarter, whereas America's continued to expand. Indeed, many economists expect Japan's economy to shrink again in the three months to September, which on the rule of thumb of two consecutive quarters of decline, would imply a recession. You might conclude that without radical reform Japan will continue to underperform. However, a more thorough health check suggests that Japan's economy is actually in better shape than it looks, and its downturn may be shorter and shallower than those in America and most European economies could be.

Three days before Mr Fukuda quit, fears that the economy was sinking into another deep recession panicked the government into announcing a modest stimulus package of tax cuts and financial assistance for transport and construction industries, and for smaller firms. Even if these measures are carried out, most economists do not think it would do much to revive the economy. Some politicians would like a big increase in public spending, but the government has promised to eliminate its primary budget deficit (ie, before interest payments) by 2011-12 in order to reduce public-sector debt of 170% of GDP—the largest among the big rich economies.

The government's balance sheet may seem dire, but the private sector's looks healthier than for many years, because Japan has avoided the economic and financial imbalances that threaten many economies in the West. Unlike America and parts of Europe, notably Britain, Japan is not experiencing a credit crunch and house prices are not collapsing. Consumer and corporate finances are also generally in better shape.

Japanese financial institutions' losses on securities linked to American subprime mortgages so far amount to just $17 billion, out of worldwide losses of $500 billion. As a result, most banks can still lend, except to property developers, some of which rely heavily on funding from abroad and from small regional banks. Several of them have gone bust in the past few months. More generally, however, Japanese house prices are unlikely to crumble. After its housing bubble burst in the 1990s, the market has not inflated again.

The biggest contrast with America and Britain is that Japanese households have reduced their debt from 71% of GDP in 2000 to 63% this year, according to Goldman Sachs. This is much lower than debt ratios of around 100% in both America and Britain, where borrowing has exploded over the past decade (see chart). The only other G7 economy where consumer debt has declined is Germany, which has also avoided a housing bubble.



Japanese companies have trimmed their debts even more dramatically, to 78% of GDP from 130% in 1991. The level is now well below where it was before the 1980s bubble, though higher than corporate America's debt of less than 50% of GDP. (American firms have traditionally relied more on equity financing.) On the other hand, corporate debt has expanded rapidly in the European Union.

Heavy debts, falling property prices and a shortage of new credit are a lethal cocktail, which could depress economic growth in America and parts of Europe for several years—as Japan itself found out in the 1990s. Today Japan's economy is much less burdened by debt and so likely to recover more quickly.

Another reason why the downturn in Japan could be fairly mild is that almost half of Japan's exports go to

other buoyant Asian economies. Exports had been the main force behind Japan’s recovery before they slowed this year. Shipments to America and to Europe have fallen, but demand from the rest of Asia remains strong. In July, for the first time, Japan exported more to China than to America.

Japan’s long-term growth rate has undoubtedly been strangled by the lack of reform. Yet its economy is now in better shape than for many years. Japan’s GDP is likely to grow faster than both America’s and the euro area’s over the next year. If so, 2009 will be the fourth year running that Japan’s GDP per head shows the biggest increase of the three. And that is not only because its population is shrinking.

South Korea and Wall Street

Deal or no deal?

Sep 4th 2008 | NEW YORK AND SEOUL
From The Economist print edition

A state-owned Korean bank nurtures a longing for Lehman Brothers

Illustration by S. Kambayashi

THERE is something of the scrappy outsider about both South Korea and Lehman Brothers, a Wall Street firm desperately in need of capital to strengthen a balance sheet battered by mortgage losses. So when Min Euoo-sung, chairman of the Korean Development Bank (KDB) said on September 2nd that his state-owned firm was trying to lead a group of Korean banks into taking a stake in Lehman, it had a ring of truth.

KDB, like other Korean banks, dreams of turning itself into a force in global banking. Lehman may be that once-in-a-lifetime opportunity to buy into the big league. It is cheap. It does not appear to have suffered large client and counterparty defections. And unlike Bear Stearns, its erstwhile rival, it can access liquidity at the Federal Reserve's discount window. If Lehman survives, it could be a profitable—and strategic—investment.

But the whole idea is also a big gamble. Mr Min's earlier offer for a majority stake was rebuffed by Dick Fuld, Lehman's boss, who wanted a premium. KDB now wants a stake of around 20% at a discount to Lehman's current share price. KDB's potential allies in South Korea have expressed little interest in the deal, fearing huge additional write-downs when Lehman reports its third-quarter earnings this month. Their enthusiasm will be further dampened by news that Lehman held a stake in Ospraie Management, a New York-based investment firm. Ospraie has been forced to close down its biggest hedge fund, which managed $2.8 billion at the start of August, because of a bad bet on commodities.

Lehman is not alone in having its fundamentals questioned. South Korea's newspapers are full of the country's own “liquidity crisis” (even with $243 billion in foreign-exchange reserves). Despite the government's efforts to calm the markets, against the dollar the won has sunk to its lowest level in almost four years. The main stockmarket index is at a one-year low. And the state has an uncomfortable exposure to other troubled American assets, such as Fannie Mae and Freddie Mac, the quasi-official mortgage agencies.

None of which should make the government keen to embark on risky foreign ventures. Reflecting the uneasiness, Jun Kwang-woo, chairman of South Korea's Financial Services Commission, a regulator, has blown hot and cold on KDB's plans. He worries that having a risky investment such as Lehman could conflict with KDB's role as a state-directed lender to business.

The government plans to sell KDB and other state-owned banks such as Woori Finance Holdings, which has its own ambitions to buy its way into Wall Street via a boutique investment bank or a private-equity firm. Woori is believed to have been approached by KDB to be part of the group to invest in Lehman, but is reluctant having suffered already from bad mortgage investments in America.

What is more, there appears to be a suspicious element of personal ambition to the affair. Mr Min has been chief executive of Lehman in South Korea. Mr Fuld, meanwhile, has a huge interest in quickly stabilising Lehman, since his days there are probably numbered.

Ultimately Lehman wants money and South Korea has it. Even so, that may well not be enough to make a deal happen.

German banking

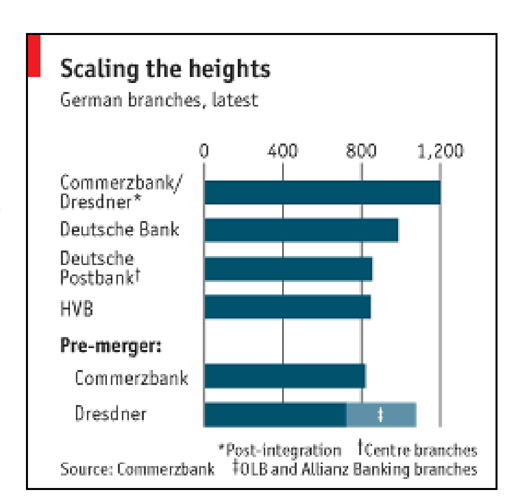
The last laugh

Sep 4th 2008
From The Economist print edition

Commerzbank's purchase of Dresdner holds lessons for other dealmakers

NOT so long ago, staff at Dresdner Kleinwort, the investment-banking arm of Dresdner, a German bank, used to refer to Commerzbank, a rival, as "Comedy bank". No one is laughing now. On August 31st Allianz, an insurer, gave up the struggle to make anything of its 2001 purchase of Dresdner and sold the bank to Commerzbank for €9.8 billion ($14.2 billion). The new entity will concentrate on its German retail and business customers. Investment-banking will shrink, with the axe expected to fall hardest in London.

The initial reaction of shareholders was unenthusiastic: shares in Commerzbank fell by more than 11% the day after the deal was announced whereas those in Allianz, which will eventually end up with a 30% stake in the enlarged bank, edged up marginally. Among other things, investors fretted that Commerzbank was paying too much for Dresdner; that the deal increased its exposure to toxic assets; and that shrinking the investment bank could be costly in a falling market. In times this febrile, such nervousness is understandable, but it is hard to question the long-term business logic behind the merger, which will create Germany's largest retail bank by number of branches (see chart), make Commerzbank the market leader with *Mittelstand* companies, and enable large cost savings through branch closures. The judgment on whether this is a good deal should be made in three years, not now, says Martin Blessing, Commerzbank's boss.



Shareholders and employees aside, should anyone outside Germany care? The rationale for the deal is domestic. In its presentation to analysts, the enlarged Commerzbank was billed as a German champion. The investment bank will focus on the things that its mid-market German clients want, such as foreign-exchange products, debt-raising or mergers and acquisitions advice. Banks in other European countries have already largely consolidated; there is surely little to learn from an in-country merger of this kind.

In fact, the deal is arguably more interesting to outsiders than to Germans. The country's banking system will remain hopelessly fragmented, thanks to the country's "three pillar" structure of private, public and co-operative banks. Further consolidation will happen only slowly: the sale of Postbank by Deutsche Post is the likeliest next milestone. "My goal is not to try and change the entire banking landscape," says Mr Blessing.

Maybe not, but the shape of the deal gives clues to the kind of dealmaking that is likely to happen elsewhere as a result of the credit crisis. Take the mechanics of the bid. Concerns about maintaining decent levels of capital help to explain why the transaction is largely in shares, not cash. The deal also shows how to settle differences between buyers and sellers in the valuation of dodgy assets. Around €4.9 billion of Dresdner's wobblier exposures will be placed in a special vehicle. Commerzbank will take the hit on first losses on these assets of up to €275m, but has put another €975m into the vehicle to cover additional losses and earmarked this amount as a contingent payment to Allianz. The insurer will only get what remains after all the losses have been taken.

There are other lessons. This is no time to be striking off in bold new directions. Both Allianz and Commerzbank have decided to keep their business mix focused on what they do best. Dresdner's investment bank will not be the only one to slim down riskier activities such as proprietary trading. Perhaps most intriguing was the presence of a Chinese bidder, reportedly China Development Bank, in the race for Dresdner. Not long ago, people would have scoffed at that prospect too.



FINANCE & ECONOMICS

Eastern European markets

Russian bears

Sep 4th 2008
From The Economist print edition

Investors take fright at political tensions

WHILE the Russian army has been on the march, investors in Russian financial markets have been in retreat. The MICEX benchmark of Russian equities has fallen by about 30% since the start of June. In August the rouble suffered its worst monthly decline for more than nine years.

The invasion of Georgia and the rise in political tensions with the West have not helped sentiment. But investors were getting worried even before the flare-up over South Ossetia and Abkhazia, the breakaway Georgian provinces. The handling of the dispute between BP, a British oil company, and its Russian partners in the TNK consortium was followed by acerbic remarks from Vladimir Putin, the president-turned-prime minister, about the head of Mechel, a Russian steel firm. That has fanned fears that the government will operate an aggressive form of “state capitalism” and ignore the rights of foreign shareholders. In addition, the Russian market is seen as a commodity play and the recent $40-a-barrel fall in crude prices has hit the share prices of natural-resource companies.

Some believe that much of the bad news is in the price. Ivan Tchakarov, a Russian strategist at Lehman Brothers, points to Russia’s strong fundamentals, including an 8% growth rate and surpluses on both the fiscal and current accounts. Glen Prentice, a fund manager at WestLB Mellon, thinks the Russian market is cheap and is adding to his positions in his eastern European fund. But Michael Hartnett, a Merrill Lynch strategist, has downgraded the Russian market, citing “high inflation, rising corporate yields and capricious politics.”

Fear of further Russian disputes with countries like Ukraine or Poland has had an impact on other markets in the region. The stockmarket of Ukraine (which has a substantial Russian-speaking population) has fallen by more than half this year and was hit again on September 3rd when the government collapsed.

Again, politics is not the only factor. Inflation in Ukraine was running at almost 27% before the Georgian crisis. The rest of eastern Europe has depended heavily on exports westward and is struggling given the recent fall in euro-zone GDP.

Fitch, a ratings agency, forecasts in its recent report on eastern Europe that GDP growth in the region will slip to 5.8% this year (the lowest since 2002) and to 5.2% in 2009. Many of the countries have big current-account deficits and some, notably Estonia and Latvia, are at risk of recession. As Fitch remarks, “the conflict between Russia and Georgia has added another layer of risk to parts of the region at an inopportune time.”



Commodities

A petrodollar saved

Sep 4th 2008
From The Economist print edition

As prices fall, can sovereign-wealth funds break the resource curse?

COUNTRIES flush with oil and ore should grow faster than those that are barren. Puzzlingly, they often do not. Natural-resource income is spent rashly or invested at the expense of other sectors of the economy. Governments binge on spending during booms and cut back harshly during busts. These policies exacerbate the economic cycle, and contribute to the paradox of the resource curse.

During the recent commodities' boom, resource-rich countries have sought to escape the curse by pouring natural-resource income into sovereign-wealth funds (SWFs). By the end of 2007 the funds were worth up to $2.5 trillion. But with oil prices tumbling to below $110 a barrel on September 3rd, their fortunes may be changing. If the rout continues, will the guardians of such rainy-day money be able to keep the politicians' fingers out?

Natural-resource funds mostly serve one of two purposes. Savings funds, such as Norway's Government Pension Fund, transfer resource wealth across generations by building portfolios that aim to provide returns long after the oil has run dry. Stabilisation funds, such as Chile's Economic and Social Stabilisation Fund, smooth out the economic cycle by accumulating revenues from commodity exports when prices are high, and disbursing them when prices drop. Then there are the oddballs; Saudi Arabia plans to set up a state fund to buy farmland in poor countries to meet rising food demand at home.

How can these pools of assets break the resource curse? Transparency matters. Unless the public can monitor a fund's behaviour, there is no guarantee public money will be invested efficiently. SWFs remain worryingly opaque. A study by Edwin Truman of the Peterson Institute for International Economics, a think-tank, found that ten out of 34 non-pension SWFs did not issue annual reports and 12 were not subject to audits. However, Mr Truman expects scrutiny by Western governments to improve accountability in future.

Co-operation helps. As natural-resource funds proliferate, they will have more opportunities to share expertise and best practices. Qatar and Indonesia, both big gas exporters, announced in August that they would set up a joint $1 billion fund to invest in energy and infrastructure.

Illiquid investments may be a blessing. Savings funds have a rising appetite for less liquid, higher-risk assets such as private equity and property. Illiquid portfolios are more difficult to cash out when the political winds change. Stabilisation funds, which may need to liquidate their assets on short notice, lack that option.

Rules about when governments must make deposits, and when they may withdraw cash, are no guarantee of good behaviour. In theory, Venezuela's government is obliged to deposit oil revenues into its Investment Fund for Macroeconomic Stabilisation whenever oil rises above a reference price (currently $9 a barrel). In practice, the fund has suffered from frequent rule changes, and would have been abolished if Hugo Chávez's 2007 referendum had not been defeated. It has seldom received what the rules promised.

By contrast, Norway's parliament has discretion over how much revenue the state's fund will receive, but that has not prevented it from becoming the second largest natural-resource fund in the world, with assets of $396.5 billion. Fiscally responsible governments may not need rules for contributions; irresponsible ones may not heed them.

Rules are useful for governments that are thriftier than Venezuela's but more profligate than Norway's, but only if they stick to them. Chile's commitment to its copper-backed stabilisation fund was tested in July by protests demanding more government spending. An effective natural-resource fund requires a government that can resist both economic populism and kleptocracy. To break the resource curse, in short, one needs the kind of government that money cannot buy.

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ECONOMICS FOCUS

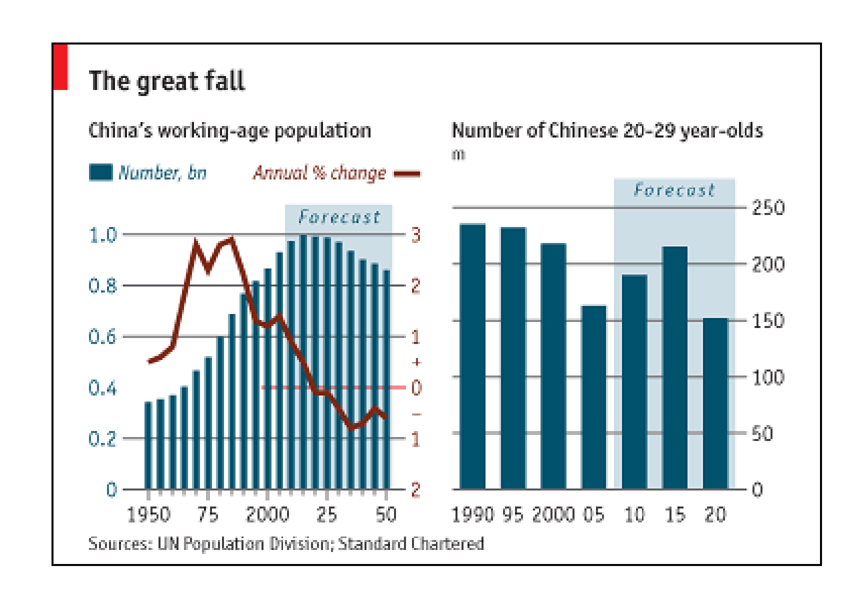
Economics focus

Reserve army of underemployed

Sep 4th 2008
From The Economist print edition

Is China's pool of surplus labour drying up?

WHAT is the single most important price in the world? Popular answers are the price of oil, American interest rates or the dollar. Yet Chinese wages are, arguably, more important. China has by far the world's biggest labour force, of around 800m—almost twice that of America, the European Union and Japan combined. Thus recent claims that it is running short of cheap labour would, if true, have huge consequences not just for China, but also for the rest of the world.



A seemingly unlimited supply of cheap workers has been one of the main forces behind China's rapid economic growth. But over the past couple of years, factory owners have complained of labour shortages and wages have risen more rapidly, leading some to conclude that China's "surplus" labour has been used up. The country's one-child policy, introduced in 1979, has caused the growth in its labour supply to slow sharply (see chart). After rising by 1.3% a year during the decade to 2005, the population of working age is expected to increase at an annual rate of 0.7% until 2015, and then shrink by 0.1% a year until 2025. At the same time, the shift of workers from agriculture to industry, which has been an important source of productivity gains, will also slow. Jonathan Anderson, an economist at UBS, reckons that these two trends will reduce China's sustainable growth rate from 9-9.5% today to 7-7.5% by 2025.

But as well as boosting growth, the flow of workers from farms to factories has held down manufacturing wages—not only in China, but also throughout the world. The theory behind this was first expounded by Sir Arthur Lewis, an economist from St Lucia, who won the Nobel prize for economics in 1979. He argued that a developing country with "surplus" (ie, underemployed) rural labour could expand industrial employment for many years without causing wage inflation, because employers enjoy such a large supply of labour. During the first 50 years of Britain's industrial revolution, real wages remained more or less flat while profits soared. Likewise in China, as millions of migrants have quit the countryside for urban factories and construction sites, the real wages of low-skilled workers barely rose during the 1980s and 1990s, despite big productivity gains; only recently have they increased rapidly.

This acceleration of wages has prompted some to conclude that China's surplus labour in the countryside has been used up. Last year Cai Fang, the director of the Institute of Population and Labour Economics at the Chinese Academy of Social Sciences, argued that China has reached the "Lewis turning point". By 2009, he predicted, there would be a widespread shortage of workers, pushing up industrial wages. Does this mean the death of China's growth model?

As so often in China, this debate is clouded by the poor data. Until recently, most estimates of surplus

labour varied between 150m and 200m people. But the true figure is probably much smaller, because government figures for the rural labour force include millions of migrants who have already moved to cities and others who work in rural industry, not farming.

In addition the population is ageing: the number of workers aged between 20 and 29 fell from 233m in 1990 to 165m in 2005. Many textile and electronics firms hire only young women in their 20s, as they are thought to be less troublesome and more willing to work long hours. Construction firms favour young single men. Older people are not only less employable, but they are also typically less willing to migrate if they have children. After taking account of this, Mr Cai estimates that China's surplus labour has been virtually exhausted.

But Stephen Green, an economist at Standard Chartered, thinks that talk of China's vanishing labour surplus is premature. In a report this year he argued that the surplus would not run out for another decade. Although the number aged between 20 and 29 fell over the past decade, their ranks are now rising again. Using the 2005 census, Mr Green estimates that the 20-something group will increase by a third in the ten years to 2015, as baby-boomers' children join the workforce (see right-hand chart); only then will it start shrinking sharply.

What is more, the recent spurt in urban wages is not necessarily proof that the surplus has gone. Mr Green argues that to attract migrant workers, urban employers have to pay more than rural income, which has increased in recent years, thanks to government policies and higher food prices. The temporary increase in the age group between 20 and 29 over the next few years will also ease the upward pressure on urban pay.

Go East, young women

The World Bank agrees that China's labour surplus has not yet run out. Even when the number of young people drops, the labour supply is determined by more than demographics. Migrant workers are usually excluded from urban social-security schemes and have to pay more for education and health care. The bank suggests that phasing out the household-registration system would encourage more people to move to the city. Vocational training for rural residents aged over 30 would equip them better for jobs in industry. And financial incentives to encourage workers to retire later could also boost the labour supply: only 60% of men and 30% of women aged over 50 have jobs.

Moreover, Mr Cai's estimate of China's labour surplus assumes that 180m workers, or 24% of total employment, are needed for farming. But that is based on today's agriculture. Mechanisation and the consolidation of land plots will boost productivity, meaning that fewer farmers will be needed. That will in turn release more workers for industry. In developed countries only 3% of workers till the land.

China's surplus labour will eventually dry up, but it still seems some years away. In any case, that moment should be cause for cheer not fear in China and elsewhere, because it will lead to bigger gains in income and consumption. That, after all, is the whole point of development.

Corrections: Poverty and the European Central Bank

Sep 4th 2008
From The Economist print edition

"The bottom 1.4 billion", on August 30th, misinterpreted the Asian Development Bank. Its report did not assume that someone consuming a low-quality good enjoys the same standard of living as someone consuming a high-quality good. It said that to gauge the global poor’s purchasing power, scholars should compare the prices of goods they actually buy, rather than the prices of high-quality goods they do not buy. Also, in "Closing the dustbin lid", we wrongly said that Macquarie Group had secured a loan from the European Central Bank (ECB) through a euro-area affiliate. The ECB has approved the use of a security issued by Macquarie as collateral. It has not lent to Macquarie, directly or indirectly. Sorry on both counts.

Global warming

A changing climate of opinion?

Sep 4th 2008
From The Economist print edition

Alamy



Some scientists think climate change needs a more radical approach. As well as trying to curb greenhouse-gas emissions, they have plans to re-engineer the Earth

THERE is a branch of science fiction that looks at the Earth's neighbours, Mars and Venus, and asks how they might be made habitable. The answer is planetary engineering. The Venusian atmosphere is too thick. It creates a large greenhouse effect and cooks a planet that is, in any case, closer to the sun than the Earth is to even higher temperatures than it would otherwise experience. Mars suffers from the opposite fault. A planet more distant from the sun than Earth is also has an atmosphere too thin to trap what little of the sun's heat is available. So, fiddle with the atmospheres of these neighbours and you open new frontiers for human settlement and far-fetched story lines.

It is an intriguing idea. It may even come to pass, though probably not in the lifetime of anyone now reading such stories. But what is more worrying—and more real—is the idea that such planetary engineering may be needed to make the Earth itself habitable by humanity, and that it may be needed in the near future. Reality has a way of trumping art, and human-induced climate change is very real indeed. So real that some people are asking whether science fiction should now be converted into science fact.

Tinkering with the atmosphere or the oceans on the scale required to do this would be highly risky and extraordinarily complex. But the alternative, getting the world's population to give up fossil fuels, is proving exceedingly hard. Geo-engineering, as it has come to be known, may be a way of buying time for the transition to a low-carbon economy to take place in an orderly manner.

In the past, geo-engineering was taboo because many felt that the very possibility of fiddling with the climate would create an excuse to avoid the hard choices a low-carbon economy would impose. However, the feeling is now growing that if politicians came to scientists for advice on the matter, it would be a good idea for them to have some to offer. To that end, the Royal Society, Britain's oldest scientific academy, has published a series of papers in its *Philosophical Transactions* outlining some of the options, and suggesting a few experiments to test whether they would work.

Transactional analysis

Broadly, these ideas fall into two categories. One is to remove excess carbon dioxide from the atmosphere. The other is to compensate for the climate-warming greenhouse effect this carbon dioxide and other gases cause, by reducing the amount of sunlight reaching the ground.

The most plausible way to remove carbon dioxide is to increase the amount of photosynthesis going on. Photosynthesis creates plant matter out of carbon dioxide and water. But rotting plant matter returns carbon dioxide to the atmosphere. So, if the gas is to be removed permanently, that rotting has to be avoided.

One widely discussed idea, which the Royal Society's correspondents re-examine, is to fertilise the oceans with iron. The growth of plankton in the sea is always limited by something. It may be light, or a familiar nutrient such as nitrate or phosphate. In some places, though, iron is the limiting nutrient. Adding iron to such places should cause a bloom of planktonic algae, thus sucking carbon dioxide out of the atmosphere.

Several preliminary experiments have shown that plankton do, indeed, bloom when iron is added. What is not clear is what happens to the carbon. For the idea to work, some of it would have to sink to the ocean floor and stay there.

One reason to think this might happen is that during recent ice ages the cold, dry conditions caused a lot of iron-rich dust to blow around. Supporters of the iron-fertilisation theory believe this dust produced blooms of oceanic algae that then sank to the seabed, taking large amounts of carbon with them, which helped to reduce temperatures still further.

Victor Smetacek, of the Alfred Wegener Institute for Polar and Marine Research in Germany, and Wajih Naqvi, of India's National Institute of Oceanography, therefore propose conducting experiments that look not only at how much carbon dioxide is sucked up, but also at what happens to it. In particular, they are interested in the fate of diatoms. These are single-celled algae which seem to absorb almost all of the extra carbon dioxide captured when the ocean is fertilised with iron. The crucial question is what happens to these diatoms when they die. If enough of them sink to the ocean floor and stay buried there, the idea should work. If they do not, it won't. By reviewing studies of the ooze at the bottom of the sea (which is often made of the shells of diatoms) Dr Smetacek and Dr Naqvi reckon the best rate of burial is to be found in the south-west Atlantic, and they propose to carry out an experiment there next year.

The advantage of fertilising the oceans is that it could be done with existing technology. The disadvantage is the unknown knock-on effects. Planktonic algae are at the bottom of the food chain. If more of them are around, the rest of that chain will be affected. This could be a good thing, of course. More algae might mean more krill, and that might mean more whales and other large sea animals. On the other hand, shallow-water blooms caused by nitrate and phosphate pollution often swamp the local environment.

A second idea for scrubbing excess carbon dioxide from the atmosphere, alluded to in the *Transactions* but not much discussed, is to plant more trees. In principle, any old trees would do—although they die and rot, more forest cover would lock up more carbon dioxide. However, genetically modified trees might grow faster. Such trees are being developed to help the lumber, pulp and biofuel industries. But fast-growing forests could also be planted in order to capture carbon dioxide quickly.

Another possibility that the Royal Society's writers consider is recycling carbon dioxide from the atmosphere into fuel, by reacting it with hydrogen. Of course, that would require a supply of hydrogen, and producing hydrogen takes energy—which would have to be generated in a way that produces no carbon dioxide.

Perhaps the most intriguing idea—which was published last year, though not discussed by the Royal Society—is to eject carbon dioxide from the atmosphere at the Earth's poles, using the planet's magnetic field. This may sound absurd, but oxygen already leaks out this way (the phenomenon is the subject of a paper just published by Hans Nilsson of Swedish Institute of Space Physics). Alfred Wong, a researcher at the University of California, Los Angeles, proposes that a system involving powerful lasers and finely tuned radio waves could encourage carbon dioxide to take the same route. His calculations suggested that using lasers to ionise molecules of carbon dioxide, and radio waves to get them to spin at the correct rate, would cause those molecules to spiral away from Earth along the lines of magnetic force until they were lost for ever in space.

Reflecting on the future

Space is likewise the destination in the other set of approaches. Reflecting sunlight back into outer space (increasing the Earth's albedo, as it is known) would also cool the planet, and the Royal Society's authors consider two ways of doing so.

One, which has been widely touted in the past is, perversely, to increase the amount of pollution in the atmosphere. Governments have spent the past half-century trying to reduce the amount of sulphur compounds in the air. These compounds are the main cause of acid rain. They also, however, have a tendency to form tiny particles that reflect sunlight back into space. That effect is most noticeable when a volcano erupts explosively, as Mount Pinatubo did in 1991, or Tambora did in 1815. Those eruptions put sulphate particles into the stratosphere, and because that is above the part of the atmosphere where weather occurs, these particles tended to stay there rather than being washed out by rain. That cooled the whole climate. The year after Tambora's explosion was known for a long time as the "year without a summer".

The reverse is also true. When civilian flights over the United States stopped in the wake of the terrorist attacks of September 2001, the lack of sulphur-laden contrails led to a perceptible rise in temperature. Philip Rasch, of the National Centre for Atmospheric Research, in Boulder, Colorado, and his colleagues are therefore exploring the idea of deliberately polluting the stratosphere with sulphate in order to reflect solar heat back into space.

To offset the rise in temperature expected by the middle of the century if things carry on as they are, the amount of sunlight reaching the Earth's surface would have to be cut by just 1.1%. That is still a lot of energy in absolute terms, but the sums suggest it is within reach. It would require the addition of about 10m tonnes of finely divided sulphate particles to the stratosphere each year. These could be sprayed out of special aircraft-borne injectors, or produced by burning high-sulphur aviation fuel.

If aviation fuel were used in this way, and was 5% sulphur (between ten and 100 times today's levels), it would require 1m flights a year to the middle of the stratosphere (between 15km and 25km up), assuming an average flight was four hours. Those flights alone would use up half as much fuel as civil aviation now consumes. However, you could achieve part of the effect by making civil aviation use dirty, high-sulphur fuel. It would not be a perfect solution. Civilian jets cruise at an altitude of 10km, the bottom of the stratosphere, and any sulphate they released would thus fall to earth faster. But it would be a lot cheaper than flying 1m special missions.

Besides polluting the stratosphere, there is another way of changing the atmosphere to make it more reflective. This is to tinker with cloud cover. One person working on this idea is Stephen Salter, a marine engineer at the University of Edinburgh best known for seeking to replace fossil fuels with Salter's duck, a device for turning ocean waves into electricity. He has also been working on the geo-engineering end of climate change.

Dr Salter and his colleague at Edinburgh, Graham Sortino, together with John Latham, one of Dr Rasch's colleagues at the National Centre for Atmospheric Research, have been looking into how clouds might be made more reflective. Their answer is to spray them with seawater. Particles of salt formed by the evaporation of ocean spray act as nuclei around which the droplets of water that form clouds can condense. Increasing the number of particles increases the number of droplets. That does not change the total amount of cloud (which is controlled by the amount of water vapour in the atmosphere). But having more, smaller droplets does increase a cloud's reflectivity.

A drop in the ocean

Dr Latham led a team of climate modellers who wondered whether, in principle, this phenomenon might be used to increase the planet's albedo enough to compensate for projected global warming. Their answer was that it could, but it would require 1.4 billion tonnes of seawater to be converted into spray each year.

Dr Salter and Dr Sortino then joined Dr Latham in trying to work out how to manage this. Their answer is a fleet of specially designed ships. These would be wind-powered—not by sails but by Flettner rotors, which are giant, rotating cylinders that extract energy from the wind using the Magnus effect. (This is the effect that causes cricket balls to swing in the air, among other things.) The ships would drag turbines through the sea to provide electricity that would both drive the cylinders and power pumps that sprayed the atmosphere with seawater, suitably broken up into droplets.

Such ships would weigh 300 tonnes. A fully operational system would require 1,500 of them. And it would have the advantage of an almost instant off switch. Stop spraying, and things would revert to normal within a couple of days.

Cui bono?

That reversibility is important. Many scientists are understandably nervous about tinkering on a grand scale with the atmosphere and the oceans. The Intergovernmental Panel on Climate Change—a scientific body appointed by the United Nations to assess the risks of a changing climate—has described geo-engineering as “largely speculative and unproven, and with the risk of unknown side-effects”.

Broadly, there are two types of fears. The first is of technological hubris. History is littered with plans that went awry because too little was known about complex natural systems. As with irrigating Soviet cotton fields from the Aral Sea in Central Asia or introducing rabbits to Australia, modifying the climate will have both physical and biological consequences. Some of these will be unpredictable and some of them may be worse than the harm they were intended to treat. Critics point out, for instance, that carbon dioxide does not just warm the atmosphere. It also makes the oceans more acidic. That is bad because many marine creatures rely on shells made of calcium carbonate to protect themselves. As every schoolboy knows, if you drop calcium carbonate (limestone, for example) into acid, it dissolves. The sea would not become so acidic that shells would actually dissolve, but the extra acidity would mean making them was harder work, which might upset the oceanic ecosystem quite badly. For this reason, approaches to geo-engineering that merely reflect heat back into space need to be viewed cautiously.

The other fear is of moral hazard—the possibility that people would see the promise of geo-engineering their way out of trouble, despite its risks and uncertainties, as an excuse to continue to pollute the atmosphere as usual.

It would be a mistake to think of geo-engineering as a substitute for curbing carbon-dioxide emissions—not merely because of the acidification of the oceans, but also because if you ever stop fertilising the oceans or spraying the atmosphere or whatever, the problem will rapidly return. Nevertheless, Brian Launder of the University of Manchester, who edited the Royal Society papers, argues that the sort of geo-engineering schemes they describe might buy the world 20 to 30 years to adjust. That breathing space would be useful if something really bad, such as the collapse into the sea of part of the Greenland ice-shelf, was in imminent danger of happening, and the realisation of the danger led to a political agreement that climate change had to be stopped rapidly.

So what now? The answer is probably to carry out preliminary trials of the sort proposed by Dr Smetacek and Dr Naqvi. Correctly done, they should help to indicate what could work, what would not, and what the financial and environmental costs might be.

Local schemes, particularly ocean fertilisation, need not be that expensive. They would be well within the budget of a small country, a large company or even a tycoon. Richard Branson, a British businessman, is already offering a prize of $25m for a workable way of removing a billion tonnes of carbon dioxide from the atmosphere every year. And at least one private firm has come in for criticism for attempting to sell carbon credits based on ocean fertilisation. And yet, the effects of geo-engineering would rarely be restricted to a single country—that is, after all, the whole point.

For this reason, if geo-engineering is to be done properly, it must be regulated properly. The world needs a way of deciding the size and scope of any project, who takes responsibility for any mistakes, and whether and how to compensate losers—of whom there will be many. Schemes designed to cool the climate could harm countries such as Canada and Russia. Global warming may make their northern wastes more habitable and allow them to exploit oil and gas located under what is now an ice-covered Arctic Ocean. Meanwhile a country such as Panama would prefer a cooler world in which ice continues to seal off the North-West Passage and to prevent competition with its canal.

Some tinkering to suit local needs may be possible. Ken Caldeira of Stanford University, another of the authors, reckons that it may be feasible to place sulphates in the stratosphere near the poles and thus cool the Earth in a place where global warming manifests itself most strongly, though that would scarcely please the Russians and the Canadians. Nor does it answer the question of how to decide whose interests such tinkering should serve.

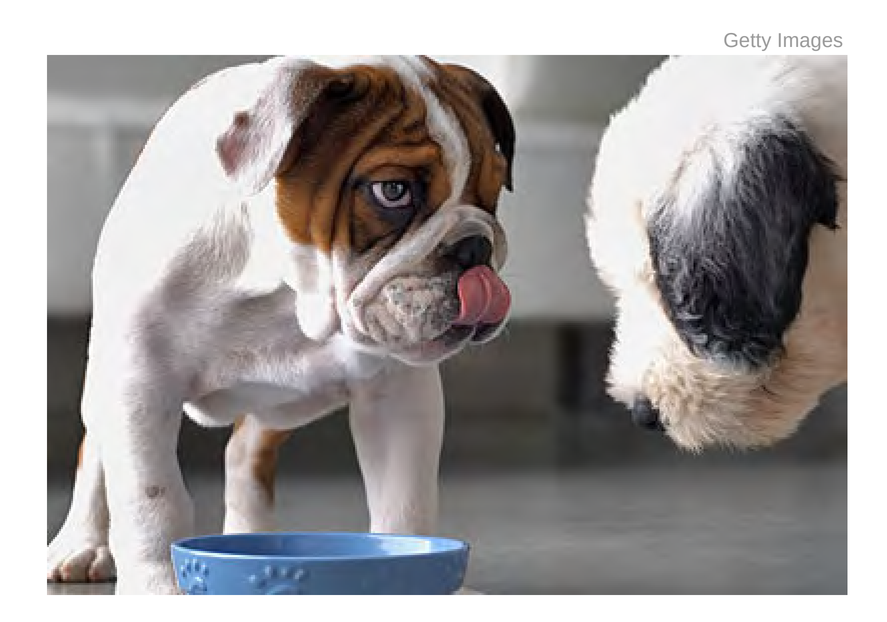
Even its advocates think geo-engineering is not to be approached lightly. Nor, though, is it something to be ignored completely. Global warming is such a threat that all the options deserve to be explored. It would be a big experiment, but it would at least be a planned one—unlike the equally big, but unplanned experiment that is now being conducted by motor cars, power stations, cement factories and logging companies all across the planet.

Food and pet food

Not on the label

Sep 4th 2008
From The Economist print edition

Getty Images



Why pet-food safety matters, even to people who do not have pets

Pet Food Politics: The Chihuahua in the Coal Mine
By Marion Nestle



University of California Press; 232 pages; $18.95 and £11.50

Buy it at
Amazon.com
Amazon.co.uk

IN THE spring of 2007 contaminated pet food killed thousands of cats and dogs in America. “Pet Food Politics” by Marion Nestle, one of America’s leading scholars of food politics, provides a vivid and detailed account of the affair and its aftermath. The book appears to be aimed at pet-lovers. Ms Nestle is shown hugging a dog in the jacket photo, and there are glowing quotes from the editors of *Whole Dog Journal* and *The Bark*. But it deserves a wider readership. Ms Nestle uses the scare, which probably killed around 4,500 animals, to illuminate the connections between the food supplies of humans, farm animals and pets, and to highlight the broader failings of food regulation.

The outbreak was caused by shipments of wheat gluten and rice-protein concentrate from China that had been adulterated with melamine and cyanuric acid, two cheap chemicals that are rich in nitrogen. Since the usual test for protein in animal feed just measures the level of nitrogen, these chemicals can be added to far more expensive feed ingredients without anybody noticing. Both chemicals can be tolerated in small amounts but are harmful in large doses, and they are even more dangerous when combined, producing crystals in the urine and causing potentially fatal kidney damage.

The contaminants also found their way into the human food chain, since “salvaged” pet food (left over from the production process) is fed to chickens and pigs, and wheat gluten also goes into feed for fish and farm animals. The concentrations involved were much lower there, but Ms Nestle’s point is that pet food was merely the part of the food-supply system where the wider problem of contamination and lack of monitoring became apparent.

The researchers who pieced together what went wrong are Ms Nestle’s heroes; her villains are the regulators and the bosses of the pet-food companies who were reluctant to look into what caused the problem and to recall their products. This put pet-owners (or “pet guardians” as some of them strangely prefer to call themselves) in the agonising position of being unsure which foods to feed their pets.

Ms Nestle explains how the structure of the pet-food industry made things worse. Most of the dodgy food

was produced by one American supplier, Menu Foods, which made it on a contract basis for several large companies. It switched to a Chinese source of wheat gluten to save money, and the contaminated product then went into dozens of different products made at its factories. Lax regulation in China was a contributing factor: the contaminated products may have been mislabelled to avoid inspections, but such inspections were rare in any case.

So was it the industrialised, globalised, outsourced food-production system that killed thousands of pets? Ms Nestle does not quite go that far, though she worthily implies that, despite the extra cost, a “local food” approach to making pet-food would be safer and would “promote the viability of rural communities”.

That said, Ms Nestle points out that America itself had the same problems with food contamination during its own anything-goes spurt of economic growth, in the late 19th century. Just as those problems, exposed by Upton Sinclair in “The Jungle”, led to an overhaul of food regulation in America, so last year’s contamination scare led to a crackdown in China. The government sent out 33,000 inspectors, who conducted over 10m inspections and shut down 150,000 unlicensed food companies. China also said it would establish systems for food recalls and export inspections. Zheng Xiaoyu, who headed its food-and-drug regulator, was convicted of taking bribes and was executed.

Ms Nestle’s book ends with a plea for another overhaul of America’s regulatory regime, which is divided between several different agencies and fails to reflect the interconnected nature of today’s food-supply systems for humans and animals. She would like more “country of origin” labelling on food of all kinds, and more funding and authority for America’s overstretched Food and Drug Administration, the main body responsible for food safety.

She compares the pet-food crisis in America to the outbreak of mad-cow disease in Europe, which led to a collapse of public trust in food regulation. She hopes the pet-food affair will be a wake-up call for everyone. As Ms Nestle puts it: “Advocacy for policies good enough to protect pets also means advocacy for policies that protect people.”

Pet Food Politics: The Chihuahua in the Coal Mine.
By Marion Nestle.
University of California Press; 232 pages; $18.95 and £11.50

Economist.com BOOKS & ARTS

The physics of mass

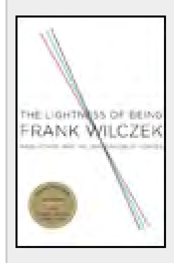
A dialogue with nature

Sep 4th 2008
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AFP

It's a patchwork of quantum fields

The Lightness of Being: Mass, Ether and the Unification of Forces
By Frank Wilczek



Basic Books; 288 pages; $26.95 and £15.99

Buy it at
Amazon.com
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NATURE abhors a vacuum; physicists are none too keen on it either. However, conceptual attempts to fill it up, most famously with ether as a hypothetical medium, have regularly created more problems than they solved. This is because whatever occupies empty space would have to be somehow different from the tangible stuff the world is made of. Now, in a fascinating twist, modern physics challenges the ancient dichotomy between substance and void. What is perceived as empty space turns out to be a new kind of ether, a patchwork of quantum fields teeming with spontaneous activity, and the fundamental building block of nature. Subject to random disturbances, this “grid”, as Frank Wilczek names it, creates stable packets of energy which, by dint of Einstein’s most famous discovery, expressed in the equation $E=mc^2$, account for the mass of ordinary matter.

Hence “The Lightness of Being”, the title of Mr Wilczek’s new book. In it the renowned physicist from the Massachusetts Institute of Technology engages in a riveting dialogue with nature, using experiments and hypotheses as questions. He draws on recent developments in the special theory of relativity, quantum field theory and quantum chromodynamics (which accounts for the behaviour of quarks and which won Mr Wilczek the Nobel prize in 2004) to arrive at a satisfactory answer about the origin of mass. In the process, he broaches some probing questions about the ultimate structure of physical reality, and about the prospects for a unified theory that would account for all its seemingly disparate aspects.

The book offers not just some striking answers, but also a peek at the creative process that produces them. At its heart lies the continual tension between new consequences derived from existing mathematical formulae, their novel physical interpretations and the search for their discernible manifestations. The most recent monument to this quest is the Large Hadron Collider, a $9 billion machine due to be fired up on September 10th at CERN, the European particle physics laboratory near Geneva. There, Mr Wilczek’s own theories will be among the first to be tested.

The book is not without flaws. Mr Wilczek seems undecided as to his intended audience. True, he minimises the use of equations and has dreamt up some imaginative metaphors to help make complex notions more accessible. But this is still not a book for the novice. Those who cannot decipher Feynman diagrams or have never heard of gauge fields (undefined even in the glossary), are advised to bone up beforehand. In chapter seven, and in the index, colour charge (a property of fundamental particles similar to electric charge) is said to come in three hues—red, white and blue. But in chapter 17, Mr Wilczek suddenly talks of a green and purple charge, leaving the reader scratching his head. What is more, the conceptual shortcuts that pose as explanations will baffle most beginners.

“The Lightness of Being” began as a series of public lectures given by the author at different institutions. They needed to be better edited to work as a book. A quotation from a 19th-century German physicist, Heinrich Hertz, for instance, appears twice, while the notion of a coupling constant (in effect, the

measure of a fundamental force's strength) is explained only some 100 pages after it is first mentioned. The numerous extended comments in brackets are also a bit of an eyesore. Most would be better as footnotes, or dispensed with altogether.

Ultimately, however, these imperfections do not stop the book being a thrilling read. In an endnote Mr Wilczek warns that the nitty gritty of quantum field theory is not for sissies. Nor is this book. But readers who are both doughty and patient will be rewarded with a glimpse of physics at its quirkiest and most illuminating.

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By Frank Wilczek.
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Israel and Iran

At each other's throats

Sep 4th 2008
From The Economist print edition

The Secret War with Iran: The 30-Year Clandestine Struggle Against the World's Most Dangerous Terrorist Power
By Ronen Bergman



Free Press; 432 pages, $27.95.
Published in Britain as "The Secret War with Iran: The 30-Year Covert Struggle for Control of a 'Rogue' State"; £16.99

IF THIS murky tale of spies and their doings can be reduced to a single proposition it is this: Iran and Israel are locked in mortal clandestine combat and for the most part the Iranians, together with their allies in Lebanon's Hizbullah, are running circles around their flatfooted Israeli adversaries. That in itself lifts Ronen Bergman's book above the ordinary. Too many accounts of spying in the Middle East dwell on the high reputation of Israel's Mossad, a reputation which may just conceivably be out of date.

Mr Bergman is a respected investigative journalist working for Israel's biggest-selling daily newspaper, *Yedioth Ahronoth*. His provenance matters because there are few other ways to know whether the tales he unfolds might be true. He claims they are based on thousands of documents, mostly classified, and over 300 interviews, a third of them with people who insisted on anonymity. So a lot of Mr Bergman's revelations need to be taken on trust.

What is undoubtedly true is that since the revolution of 1979 turned Iran into an implacable foe of Israel, the intelligence services of the Islamic Republic and the Jewish state have been at each other's throats. This has not prevented occasional collaboration. In the early 1980s (even before the infamous Iran-contra scandal), says Mr Bergman, Israel sold arms to revolutionary Iran as an operation known as "Seashell", in part to ensure that the war between Iran and Iraq would continue to weaken two enemies but also in a forlorn effort to win back some of the influence Israel had enjoyed in Tehran before the fall of the shah. For the most part, however, the two countries have been in conflict.

Since Iran is far from Israel, the deadliest arena has been Lebanon, where Iran has emerged the clear victor. The Israeli occupation of a "security zone" in southern Lebanon from 1982 to 2000 embittered the local Shia population, making it easier for their Iranian co-religionists to build Hizbullah into a potent political and military force. During that period, in Mr Bergman's telling, Israel failed miserably to penetrate the Shia organisation. Time and again, long before the war of 2006, Hizbullah surprised Israel with its feats of espionage, novel tactics and new weapons. By contrast, he says, Israel's efforts against Hizbullah looked more like those of a bumbling Inspector Clouseau than a James Bond.

To buttress these claims, the author gives plenty of chapter and verse, describing numerous specific Israeli operations, mostly failures, and naming and quoting some of their former commanders. He also offers a detailed account of the violent career of Imad Mughniyeh, the man he says was responsible for some of Hizbullah's most spectacular attacks, including the bombing of the American marine barracks in Beirut in 1983. A year later, this book claims, it was Mughniyeh who kidnapped William Buckley, the CIA's station chief in Beirut, and who oversaw his torture and death. David Barkai, an Israeli intelligence officer who spent years in vain pursuit of the Hizbullah man, recalls his quarry with respect: more than charisma as a leader, Mughniyeh was able to bring "artistry" to the "technology of terror".

Accounts of intelligence are fascinating when they allow recent hard-to-explain events to be re-interpreted in a new light. One example is the strange affair of Elchanan Tennenbaum, a colonel in Israel's reserves who was taken hostage by Hizbullah in 2000 and for whom Israel later traded a surprisingly large number of prisoners. The reason, says Mr Bergman, is that the colonel was privy to details of "the project", an advanced weapons system with many American components that was supposed to be decisive in a future war.

If Lebanon has been the main arena of conflict between Iran and Israel, the main issue between them has long been Iran's presumed quest for nuclear weapons. Here too Mr Bergman argues that the Iranians have consistently deceived and outwitted Israel and its Western allies. But this story is not yet over" and

for those who want it there is reason to wonder whether Iran's defeat of Israeli intelligence has been quite as comprehensive as Mr Bergman claims. One example is the assassination" by Israel, according to Hizbullah" of Mughniyeh in Damascus in February, just as Mr Bergman's book was about to go to press. Another was Israel's discovery, and destruction in September 2007, of what appears to have been a secret Syrian nuclear reactor, which Mr Bergman claims Iran was helping to pay for.

But was Iran really involved? One of this reviewer's own intelligence sources says that Iran was not complicit in and seemed to know nothing about the Syrian venture. Another, who has reason to know about such things, doubts Mr Bergman's claim that a crucial tip-off came from Ali Reza Askari, an Iranian general who disappeared and is thought to have defected to the CIA. Still, spying is a rum business. Sometimes, as Winston Churchill said, the truth is so precious it must be protected by a bodyguard of lies. Not every juicy detail in this book is necessarily correct, and few can be easily verified. Mr Bergman's portrayal of Israel's confrontation with Iran will also strike some non-Israeli readers as excessively Manichaean. But it makes nonetheless for an enthralling read.

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Anthony Capella's gourmet fiction

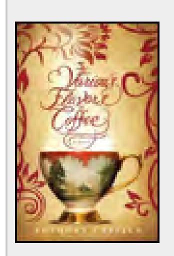
Coffee without the grind

Sep 4th 2008
From The Economist print edition

Anthony Capella serves up a fine new helping of gourmet fiction

Illustration by Daniel Pudles

The Various Flavours of Coffee
By Anthony Capella



Random House; 560 pages; $22. To be published in Britain by Sphere in November

Buy it at
Amazon.com
Amazon.co.uk

"WHEN a woman gives a man coffee, it is a way of showing her desire." This Abyssinian proverb forms the theme of Anthony Capella's third novel, an erotic, exotic story set at the turn of the 20th century, which builds upon Mr Capella's reputation as a writer of gourmet fiction.

Robert Wallis, a feckless yet appealing 22-year-old dandy, whose only assets are his charm, his palate and a talent for words, spends his days gossiping in the dining rooms of Piccadilly and his nights sampling the whorehouses of *fin-de-siècle* London. As his allowance dwindles he accepts a job with Samuel Pinker, a coffee merchant, who wants him to create a "vocabulary of coffee" based on its many subtle flavours.

When Wallis inconveniently falls in love with Emily, Pinker's suffragette daughter (whose long fingers he can imagine "doing all sorts of things, some of them deliciously improper"), he is sent to Africa to establish a coffee plantation. Here he discovers the torment of desire and the pain of betrayal, and eventually realises that friendship, loyalty and respect are as much a part of love as passion.

"The Various Flavours of Coffee" is a darker book—the end is especially moving—than Mr Capella's previous novels, "The Food of Love" (2004) and "The Wedding Officer" (2006). But it will still appeal to his many fans for its imaginative storyline and boldly descriptive prose. The author portrays Fikre, a beautiful slave, as "thin-hipped as a cheetah", her skin so black that "like a piece of split coal it seems almost silver where it catches the light." A desert village perches "on the edge of the hot sands like a small harbour on the edge of a great sea". Sex is the "playful intoxication of a world reduced to just a room, two bodies and a bed".

Woven throughout are the flavours, smells and characteristics of coffee; the hot nut aroma of a Java as water first hits the beans; the beeswax-on-leather aftertaste of a Yemeni mocha; the earthy, clay-like flavours of coffees from Africa "evoking the stamp of naked feet on sun-baked ground".

The novel's main flaw is that its occasional longueurs detract from the main storyline; its editor might have wielded a sharper pair of scissors. Despite this, the message is clear: love is a multifaceted, unpredictable and complex emotion. "Just as a good coffee might smell of—perhaps—leather and tobacco and honeysuckle, all at once, so love is a mixture of any number of feelings: infatuation, idealism, tenderness, lust—and a thousand more besides."

The Various Flavours of Coffee.
By Anthony Capella.
Random House; 560 pages; $22. To be published in Britain by Sphere in November

Economist.com BOOKS & ARTS

The assassination of Franz Ferdinand

One morning in Sarajevo

Sep 4th 2008
From The Economist print edition

One Morning in Sarajevo: 28 June 1914
By David James Smith



Weidenfeld & Nicolson; 336 pages; £18.99

THE rebellious Slav subjects of the sclerotic Habsburg monarchy called it the "graveyard of nations". However, for most people in the east and south of the Austro-Hungarian empire the early years of the 20th century were, in retrospect, a golden age: peaceful and law-governed in a way that contrasts poignantly with the totalitarian decades that followed. The great pity is that Emperor Franz Josef II, who ruled the empire from 1848 to 1916, enjoyed robust good health, living to the overripe old age of 86 and blocking the changes that modernity required of his country. Under a different monarch with a more reformist bent, the empire might have survived for many happy decades more.

The shots that killed the heir-apparent to the imperial throne, Archduke Franz Ferdinand, and his wife, Sophie, in Sarajevo on June 28th 1914 unleashed the destruction of the Habsburg empire, the most advanced multicultural and multi-ethnic state that Europe had ever seen. The imperial government in Vienna believed that the assassination was a Serb-backed plot; an ultimatum was followed by war; Russia came to Serbia's defence, Germany to Austria's, France to Russia's and so on. A Balkan squabble about Bosnia-Herzegovina, a province grabbed by the Habsburgs from the declining Ottoman empire, caused the destruction of a whole world.

It is not only those who hanker for the Pax Habsburgiana who find the story of the assassination gripping. It also has echoes of present-day terrorism. Self-obsessed youngsters from middle-class families, convinced of the rightness of their muddled nihilistic creed, raging at the unfairness of the grown-ups' world, and willing to murder those who represent it: the conspirators of 1914 had at least something in common with today's Islamist terrorists. They also planned to commit suicide, in order that their plot's secrets would die with them.

David James Smith tries to paint the story of the Sarajevo murders on a wide canvas. His book is the story not only of seedy, neurotic drifters, but also of the clash of civilisations: Russian revolutionary and anarchist ideas, mixed with the fervid myths of Serbian nationalism, against the stifling, snobbish autocracy of the dual monarchy. Poignant ironies abound. One of the main goals of the self-professed revolutionary socialists was to create a south-Slav state—under a Serbian monarch, no less. Nothing very left-wing about that. After the assassination, most Sarajevans were distraught, not ecstatic. Loyal Muslim and Catholic citizens rioted side-by-side against the treacherous Serbs. (Islam in those days was a private affair, not a political one.)

And the archduke, although foul-tempered, and bloodthirsty when it came to hunting, was a notable dove when it came to Serbia. He supported equal rights for the southern Slavs within the empire and raged against the protocol-ridden royal court. It is only a minor exaggeration to say that Gavrilo Princip and his pals shot the one man who could have brought prosperity and freedom to the people that the archduke cared most about. "If it hadn't been for them we'd still be in Austria," says a cross taxi-driver in modern-day Sarajevo, when asked about a memorial to the conspirators.

Sadly, the author seems to miss the point of that, and much else. The book uncritically recycles the Serbian romantic (and largely invented) version of history. It crams the complex politics of the time into a straitjacket of modern political correctness: empires are bad and freedom fighters good. The potted history is garbled in places, and the book is peppered with tiresome errors of fact and transcription. Rebecca West, a British author, published her epic book on Yugoslavia in 1941, so certainly did not research it in the "1940s". Pijemont may be the Bosnian word for the Italian province of Piedmont, but is unlikely to mean much to the English-speaking reader. The book would have benefited from better editing and proofreading. The Croatian wartime fascists were "Ustashi" not "Utasa". Flippant jokes about Freemasons, bizarre punctuation and leaden travelogue about the roast lamb that the author ate for lunch add to the reader's feeling of frustration.

Most of the book, as Mr Smith acknowledges, is based on other people's scholarly efforts. His own research, particularly in tracking down relatives of the assassins and those who knew them, is commendable. Yet even when Mr Smith finds the conspirators' memorial in a neglected Sarajevo graveyard, he seems to miss the irony of the inscription on it: a line by a famous Montenegrin poet-prince that says, roughly, that being remembered makes you live for ever. Does living in infamy count?

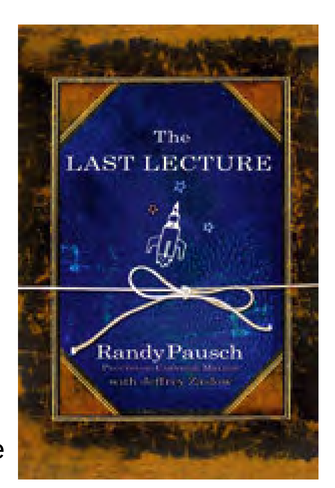
One Morning in Sarajevo: 28 June 1914.
By David James Smith.
Weidenfeld & Nicolson; 336 pages; £18.99

Amazon worldwide bestsellers

Facts made easy

Sep 4th 2008
From The Economist print edition

Write them down and make them all come true



HOW-TO books are the most successful kind of non-fiction; the best sell millions of copies. As John McCain and Barack Obama each try and persuade Americans that they are the key to the future, authors with just as much energy and drive are peddling different how-to fantasies: how to pass your SAT test, how to help your company “make the leap” from good to great, how to cook Chinese food.

But it is Randy Pausch, until he died of pancreatic cancer in July, a professor of computer science at Carnegie-Mellon University in Pittsburgh, who is outselling them all with his advice on how to achieve your childhood dreams. Asked to speak as part of a series called “The Last Lecture”, Pausch recounted how as a child he persuaded his parents to let him repaint his room, how he got to experience zero gravity, how he married the woman of his dreams, learned how not to be arrogant and got to meet Captain Kirk. “We cannot change the cards we are dealt,” he says in “The Last Lecture”, “just how we play the hand.” That’s how to sell a book.

Facts made easy

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by Randy Pausch

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Yuri Nosenko

Sep 4th 2008
From The Economist print edition

Getty Images



Yuri Ivanovich Nosenko, a Soviet defector, died on August 23rd, aged 80

THERE were many reasons why Yuri Nosenko found himself, in June 1962, sitting in an overstuffed armchair in a fussily furnished CIA flat in Geneva, with a glass of American whiskey in one hand and an American cigarette in the other, offering to sell “two pieces of information”. He suggested several of them himself. A prostitute had robbed him of his $250 spending allowance as a member of the Soviet disarmament delegation, and he desperately needed cash. He had spent too many nights on the town, and lost the money that way. Or it was not a matter of money at all; he simply wanted to get in touch with Americans, because the urge to defect to the West “was slowly growing in me since my studentship”.

But Mr Nosenko was no ordinary Russian. He was a member of the KGB, chief of the First Section of the Seventh Department of the Second Directorate, whose job was “work against tourists”. At that first meeting he declared himself not yet “psychologically ready” to defect. So for the next two years, with $25,000 deposited for him in a Western back account, he stayed in the KGB and passed on information. He had agreed that, on visits to the West, he would meet his contacts at 7.45pm outside the first cinema listed in the local telephone book two days after sending a telegram signed “George”. And so in February 1964 there he was, with his combed-back hair and broad, soulful face, loitering outside the ABC in Geneva as if waiting for a girl; but in fact eager, now, to jump.

The Oswald file

Over the previous two years, he had told his CIA contacts in detail how their chief informant, Popov, had been exposed; how bugs had been planted in the American embassy in Moscow; how the KGB had tried to recruit Americans and had laid honeytraps for others; and, most useful of all, how he had reviewed the entire KGB file on Lee Harvey Oswald, President Kennedy’s killer, and knew for a fact that the KGB had never used him because he was “unstable”. This was riveting stuff. Perhaps, thought the high-ups in counter-intelligence in Langley, it was too good. It seemed to James Jesus Angleton, the head of CI, that Mr Nosenko was no random defector. He had been despatched by the KGB to call in question the information given by another source, Anatoly Golitsin, to divert his leads, to clear the Soviet Union of complicity in Kennedy’s murder and (Angleton’s wild head piling suspicion on suspicion) to work towards

the destruction of the United States.

Mr Nosenko had his odd sides, undoubtedly. He seemed to have left his wife and daughters without compunction; they would be "OK", he thought. He admitted he had made "stupid blunders": drank too much, gone with too many women, invented fables about his life. He claimed to have twice run away to the front as a boy, itching to fight the Germans. He said he had graduated from the Moscow State Institute in 1949, concealing the fact that he had failed the Marxism paper and had to take his finals again. At his first Geneva interview he gave his KGB rank as lieutenant-colonel, when he had never got past captain. His father had been Stalin's minister of shipbuilding for 17 years, commemorated with a bronze plaque in the Kremlin wall. But the son was feckless, doing indifferently at his posh schools, recruited into the KGB only because Daddy knew General Kobulov and, at a party at the family's dacha in 1953, had introduced them.

His inflated KGB career had in fact been predictably modest, almost upended at the start when he showed his operative's papers and passport to a doctor treating him for gonorrhoea. That earned him arrest for 15 days. Between 1955 and 1963 he was shuffled around in various jobs within the Second Directorate. But his father's name still helped, earning him the privilege of trips abroad. While there, he decided he wanted to live in the West.

This simple motivation was not credited when he came to the United States. Instead, for three years, he was incarcerated and interrogated to make him confess that, first, he was not Nosenko and, second, that he had been sent on purpose. A small cell was built for him at a CIA facility in Maryland. The single window was boarded up, and a 60-watt bulb was kept burning. Weak tea and porridge were fed to him. He was not allowed to hear a sound or to read. When, in desperation, he secreted the instructions for a tube of toothpaste, they were taken away. When he made a calendar from threads unravelled from his clothes, it was destroyed. In one week, in 1966, he was given polygraph tests for 28½ hours. At one point an extra machine was fitted which could, he was told, read his mind. All this was later found to have contravened the CIA's founding charter. But it did not make Mr Nosenko change his story.

America's spies were as thoroughly divided about him as any KGB agent could have wished. In 1968, shamefacedly, the CIA rehabilitated him, awarded him $150,000 in compensation and gave him a new name. He settled somewhere in the South, unbitter and "well-adjusted", married an American and was invited sometimes secretly to Langley to speak, to tumultuous ovations. And to friends in the agency he gave a new reason for that long-ago June day in Geneva. "I was snookered…I was drunk—very drunk."



Overview

Sep 4th 2008
From The Economist print edition

Australia's central bank cut its benchmark interest rate by 0.25 percentage points, to 7%. The bank reckons that past increases in rates, along with tighter credit conditions, had cooled the economy by enough to push inflation below 3% by 2010. GDP in Australia rose by 0.3% in the second quarter, less than half the first-quarter increase.

In **America** the Institute for Supply Management's manufacturing index edged down from 50 to 49.9 in August.

GDP in the **euro area** fell by 0.2% in the second quarter, unrevised from a provisional estimate, leaving it 1.4% higher than a year earlier. Both investment and consumer spending declined in the quarter. Retail sales fell again in July, by 0.4%, the fifth drop in six months. Sales were 2.8% lower than in July 2007.

In **Britain**, the number of mortgages approved for house purchase fell in July, to 33,000, the lowest since comparable records began in 1993 and 71% below the level a year earlier.

Consumer-price inflation in **South Korea** edged down to 5.6% in August, leaving it still well above the central bank's target rate of 2.5-3.5%.

Analysts have taken a knife to their forecasts for GDP growth in Britain, the euro area and Japan, but are more optimistic about America's prospects, according to *The Economist*'s **monthly poll of forecasters** (see article).



Output, prices and jobs

Sep 4th 2008
From The Economist print edition

Output, prices and jobs

% change on year ago

	Gross domestic product				Industrial production	Consumer prices			Unemployment
	latest	qtr*	2008†	2009†	latest	latest	year ago	2008†	rate‡, %
United States	+2.2 Q2	+3.3	+1.6	+1.3	−0.1 Jul	+5.6 Jul	+2.4	+4.2	5.7 Jul
Japan	+1.0 Q2	−2.4	+1.0	+0.9	+2.0 Jul	+2.3 Jul	nil	+1.6	4.0 Jul
China	+10.1 Q2	na	+9.8	+9.0	+14.7 Jul	+6.3 Jul	+5.6	+6.6	9.5 2007
Britain	+1.4 Q2	+0.2	+1.2	+0.6	−1.6 Jun	+4.4 Jul§	+1.9	+3.7	5.4 Jun††
Canada	+0.7 Q2	+0.3	+1.1	+2.0	−5.9 Jun	+3.4 Jul	+2.2	+2.5	6.1 Jul
Euro area	+1.4 Q2	−0.8	+1.3	+0.9	−0.5 Jun	+4.0 Jul	+1.8	+3.6	7.3 Jul
Austria	+2.3 Q2	+1.6	+2.3	+1.6	−1.1 Jun	+3.8 Jul	+2.1	+3.0	4.2 Jul
Belgium	+2.0 Q2	+1.2	+1.5	+1.1	+1.5 May	+5.4 Aug	+1.1	+4.4	11.1 Jul‡‡
France	+1.1 Q2	−1.2	+1.2	+1.0	−1.6 Jun	+3.6 Jul	+1.1	+3.3	7.3 Jul
Germany	+1.7 Q2	−2.0	+1.8	+1.1	+1.6 Jun	+3.1 Aug	+2.2	+3.0	7.6 Aug
Greece	+3.5 Q2	+3.1	+2.8	+2.8	−3.4 Jun	+4.9 Jul	+2.5	+4.6	6.6 May
Italy	nil Q2	−1.1	+0.2	+0.5	−1.8 Jun	+4.0 Aug	+1.6	+3.5	6.5 Q1
Netherlands	+2.8 Q2	−0.2	+2.3	+1.3	+1.2 Jun	+3.2 Aug	+1.1	+2.4	3.9 Jul††
Spain	+1.8 Q2	+0.4	+1.4	+0.6	−9.0 Jun	+4.9 Aug	+2.2	+4.5	11.0 Jul
Czech Republic	+4.5 Q2	+3.6	+4.7	+5.4	+2.2 Jun	+6.9 Jul	+2.3	+6.6	5.3 Jul
Denmark	+1.3 Q2	+1.2	+0.8	+0.8	+0.4 Jul	+4.0 Jul	+1.2	+3.5	1.6 Jul
Hungary	+2.2 Q2	+2.4	+2.0	+3.3	−0.3 Jun	+6.7 Jul	+8.4	+6.5	7.5 Jul††
Norway	+5.9 Q2	+0.9	+2.5	+2.2	+5.9 Jun	+4.3 Jul	+0.4	+3.3	2.6 Jun***
Poland	+5.8 Q2	na	+5.4	+4.3	+5.6 Jul	+4.8 Jul	+2.3	+4.2	9.4 Jul‡‡
Russia	+8.5 Q1	na	+7.5	+6.8	+3.2 Jul	+14.7 Jul	+8.7	+14.0	5.3 Jul‡‡
Sweden	+0.7 Q2	−0.1	+1.7	+1.6	−1.5 Jun	+4.4 Jul	+1.9	+3.9	5.8 Jul‡‡
Switzerland	+2.4 Q2	+1.5	+2.0	+1.3	+4.4 Q1	+2.9 Aug	+0.4	+2.7	2.6 Jul
Turkey	+6.6 Q1	na	+4.5	+4.3	+0.8 Jun	+11.8 Aug	+7.4	+11.0	8.9 Q2‡‡
Australia	+2.7 Q2	+1.1	+2.7	+2.6	+2.4 Q1	+4.5 Q2	+2.1	+4.4	4.3 Jul
Hong Kong	+4.2 Q2	−5.5	+4.7	+4.4	−4.4 Q1	+6.3 Jul	+1.5	+5.3	3.2 Jul††
India	+7.9 Q2	na	+7.7	+7.1	+5.4 Jun	+8.3 Jul	+6.5	+7.1	7.2 2007
Indonesia	+6.4 Q2	na	+5.8	+5.5	+3.3 Jun	+11.8 Aug	+5.5	+10.3	8.5 Feb
Malaysia	+6.3 Q2	na	+6.0	+5.6	+1.5 Jun	+8.5 Jul	+1.6	+5.4	3.6 Q1
Pakistan	+5.8 2008**	na	+6.0	+4.4	−4.2 Jun	+24.3 Jul	+6.4	+18.6	5.6 2007
Singapore	+1.9 Q2	−6.6	+4.6	+4.8	−21.9 Jul	+6.5 Jul	+2.6	+6.0	2.3 Q2
South Korea	+4.8 Q2	+3.4	+4.4	+4.2	+9.1 Jul	+5.6 Aug	+2.0	+4.2	3.2 Jul
Taiwan	+4.3 Q2	na	+4.3	+4.4	+1.1 Jul	+5.9 Jul	−0.3	+3.4	3.9 Jul
Thailand	+5.3 Q2	+2.9	+4.8	+4.5	+10.9 Jul	+6.4 Aug	+1.1	+8.5	1.5 May
Argentina	+8.4 Q1	+2.4	+6.0	+4.0	+5.1 Jul	+9.1 Jul	+8.6	+9.7	8.0 Q2‡‡
Brazil	+5.8 Q1	+2.9	+4.6	+3.4	+8.5 Jul	+6.4 Jul	+3.7	+6.0	8.1 Jul‡‡
Chile	+4.3 Q2	+7.4	+3.6	+3.8	+3.0 Jul	+9.5 Jul	+3.8	+8.4	8.4 Jul††‡‡
Colombia	+4.1 Q1	−3.7	+4.5	+4.0	−6.6 Jun	+7.9 Aug	+5.2	+6.7	11.0 Jul‡‡
Mexico	+2.8 Q2	+0.6	+2.3	+2.5	−0.5 Jun	+5.4 Jul	+4.1	+4.8	4.2 Jul‡‡
Venezuela	+7.1 Q2	na	+5.2	+3.0	−1.4 May	+33.7 Jul	+17.2	+30.6	7.5 Q2‡‡
Egypt	+7.5 Q1	na	+7.1	+6.7	+7.5 2007**	+22.2 Jul	+7.7	+17.1	9.0 Q1‡‡
Israel	+4.9 Q2	+4.2	+4.0	+3.2	+18.7 Jun	+4.8 Jul	+0.3	+4.3	5.9 Q2
Saudi Arabia	+3.5 2007	na	+7.2	+5.1	na	+11.1 Jul	+3.8	+8.5	na
South Africa	+4.5 Q2	+4.9	+3.2	+3.5	+6.1 Jun	+13.4 Jul	+7.0	+10.3	23.1 Jun‡‡
MORE COUNTRIES Data for the countries below are not provided in printed editions of *The Economist*									
Estonia	−1.4 Q2	+3.6	−0.6	+2.0	−5.2 Jul	+11.1 Jul	+6.4	+10.5	2.6 Jun
Finland	+3.1 Q1	+2.7	+2.8	+2.4	−1.4 Jul	+4.4 Jul	+2.6	+3.8	6.4 Jul
Iceland	+1.1 Q1	−14.0	nil	+0.8	+0.4 2007	+14.5 Aug	+3.4	+12.0	1.1 Jul‡‡
Ireland	−1.5 Q1	−0.9	−0.5	−0.1	+6.1 Jun	+4.4 Jul	+5.0	+4.0	5.9 Jul
Latvia	+3.3 Q1	na	−0.4	+0.5	−6.9 Jul	+16.6 Jul	+9.5	+15.8	5.7 Jun
Lithuania	+5.3 Q2	+4.5	+5.5	+4.8	na	+12.2 Jul	+5.1	+11.0	4.8 Jul‡‡
Luxembourg	+2.5 Q1	+5.3	+2.8	+2.6	+0.7 Jun	+4.0 Aug	+1.9	+4.0	4.1 Jul‡‡
New Zealand	+0.9 Q1	−2.3	+0.7	+1.6	+2.4 Q1	+4.0 Q2	+2.0	+4.1	3.9 Q2
Peru	+11.5 Jun	na	+7.9	+6.6	+7.5 Jun	+6.3 Aug	+2.2	+5.3	9.2 Jul‡‡
Philippines	+4.6 Q2	+8.4	+4.7	+5.4	+5.1 Jun	+12.2 Jul	+2.6	+9.6	8.0 Q2‡‡
Portugal	+0.9 Q2	+1.4	+1.4	+1.3	−0.4 Jul	+3.1 Jul	+2.4	+2.7	7.3 Q2‡‡
Slovakia	+7.6 Q2	na	+7.5	+5.2	+6.2 Jun	+4.9 Jul	+2.3	+4.2	7.5 Jul‡‡
Slovenia	+5.4 Q1	na	+4.5	+4.0	+1.9 Jun	+6.0 Aug	+3.5	+6.0	6.4 Jun‡‡

*% change on previous quarter, annual rate. †*The Economist* poll or Economist Intelligence Unit estimate/forecast. ‡National definitions.- §RPI inflation rate 5.0% in July. **Year ending June. ††Latest three months. ‡‡Not seasonally adjusted.§§New series ***Centred 3-month average

The Economist commodity-price index

Sep 4th 2008
From The Economist print edition

The Economist commodity-price index

2000=100

	Aug 26th	Sep 2nd*	% change on one month	% change on one year
Dollar index				
All items	251.5	234.8	-2.7	+15.3
Food	249.6	240.3	-0.9	+30.0
Industrials				
All	254.0	227.5	-4.9	-0.1
Nfa†	189.1	189.7	-3.0	+17.9
Metals	289.5	248.3	-5.7	-6.1
Sterling index				
All items	207.4	199.3	+6.5	+29.8
Euro index				
All items	158.7	149.5	+3.8	+7.9
Gold				
$ per oz	827.50	797.45	-9.4	+17.2
West Texas Intermediate				
$ per barrel	116.08	110.32	-7.1	+46.9

*Provisional †Non-food agriculturals.

The Economist poll of forecasters, September averages

Sep 4th 2008

From The Economist print edition

The Economist **poll of forecasters, September averages** (previous month's, if changed)

	Real GDP, % change Low/high range		Real GDP, % change average		Consumer prices % increase		Current account % of GDP	
	2008	2009	2008	2009	2008	2009	2008	2009
Australia	2.5/3.4	2.3/2.8	2.7 (2.8)	2.6 (2.7)	4.4 (4.0)	3.3 (3.2)	-5.1 (-5.6)	-4.5 (-4.9)
Belgium	1.3/1.7	0.8/1.3	1.5 (1.6)	1.1 (1.3)	4.4	2.6	0.7 (1.1)	0.7 (1.0)
Britain	1.0/1.5	0.1/1.3	1.2 (1.4)	0.6 (1.0)	3.7 (3.6)	2.9	-3.4 (-3.6)	-3.0 (-3.5)
Canada	0.4/1.8	1.0/2.5	1.1 (1.2)	2.0 (1.9)	2.5 (2.3)	2.2 (2.3)	0.9 (0.8)	0.4 (0.7)
France	0.9/1.6	0.5/1.5	1.2 (1.5)	1.0 (1.2)	3.3	2.3	-1.7 (-1.5)	-1.8 (-1.6)
Germany	1.6/2.1	0.6/1.6	1.8 (2.0)	1.1 (1.3)	3.0	2.2 (2.3)	6.7 (6.4)	6.3 (5.8)
Italy	-0.1/0.4	0.1/0.8	0.2 (0.4)	0.5 (0.7)	3.5 (3.6)	2.5 (2.6)	-2.6 (-2.7)	-2.5 (-2.7)
Japan	0.7/1.5	0.2/1.6	1.0 (1.4)	0.9 (1.2)	1.6	1.0	3.7 (4.1)	3.6 (4.2)
Netherlands	1.8/2.6	0.8/1.8	2.3 (2.4)	1.3 (1.6)	2.4 (2.5)	2.5	5.8 (5.9)	5.5
Spain	0.6/1.8	-0.7/1.6	1.4 (1.6)	0.6 (1.0)	4.5 (4.3)	3.1 (3.0)	-9.8 (-9.4)	-8.9 (-8.6)
Sweden	1.0/2.2	1.2/2.2	1.7 (1.9)	1.6 (1.7)	3.9 (3.7)	2.8	7.7 (7.9)	7.2 (7.3)
Switzerland	1.6/2.2	1.0/1.8	2.0	1.3 (1.4)	2.7	1.8 (1.9)	14.5 (13.9)	14.3 (13.2)
United States	1.2/2.1	0.6/2.1	1.6 (1.5)	1.3 (1.2)	4.2 (4.4)	2.6 (2.7)	-4.8	-4.4
Euro area	1.2/1.6	0.1/1.3	1.3 (1.6)	0.9 (1.2)	3.6	2.5 (2.6)	-0.3	-0.3

Sources: ABN AMRO, BNP Paribas, Citigroup, Decision Economics, Deutsche Bank, Economist Intelligence Unit, Goldman Sachs, HSBC Securities, KBC Bank, JPMorgan Chase, Morgan Stanley, Scotiabank, UBS



Trade, exchange rates, budget balances and interest rates

Sep 4th 2008
From The Economist print edition

Trade, exchange rates, budget balances and interest rates

	Trade balance* latest 12 months, $bn	Current-account balance latest 12 months, $bn	Current-account balance % of GDP 2008†	Currency units, per $ Sep 3rd	Currency units, per $ year ago	Budget balance % of GDP 2008†	Interest rates, % 3-month latest	Interest rates, % 10-year gov't bonds, latest
United States	−836.2 Jun	−710.7 Q1	−4.8	–	–	−2.4	2.10	3.69
Japan	+92.4 Jun	+207.3 Jun	+3.7	108	115	−2.8	0.75	1.46
China	+249.2 Jul	+371.8 2007	+8.6	6.84	7.55	0.5	4.31	4.67
Britain	−186.4 Jun	−102.4 Q1	−3.4	0.56	0.50	−3.8	5.73	4.49
Canada	+47.1 Jun	+13.6 Q2	+0.9	1.06	1.05	0.2	2.40	3.52
Euro area	+3.5 Jun	−31.5 Jun	−0.3	0.69	0.73	−0.9	4.96	4.14
Austria	+0.3 May	+14.8 Q1	+2.9	0.69	0.73	−0.6	4.96	4.34
Belgium	+9.5 May	−1.1 Mar	+0.7	0.69	0.73	−0.7	5.03	4.51
France	−70.2 Jun	−46.2 Jun	−1.7	0.69	0.73	−2.9	4.96	4.34
Germany	+286.2 Jun	+273.5 Jun	+6.7	0.69	0.73	1.1	4.96	4.14
Greece	−64.6 May	−49.9 Jun	−13.9	0.69	0.73	−2.6	4.96	4.84
Italy	−11.8 May	−67.6 Jun	−2.6	0.69	0.73	−2.6	4.96	4.77
Netherlands	+60.3 Jun	+50.7 Q1	+5.8	0.69	0.73	0.7	4.96	4.35
Spain	−153.4 Jun	−167.3 Jun	−9.8	0.69	0.73	−1.1	4.96	4.51
Czech Republic	+6.1 Jul	−5.0 Jun	−2.7	17.2	20.3	−1.8	3.75	4.52
Denmark	+4.5 Jun	+3.8 Jun	+1.1	5.16	5.46	3.8	5.70	4.39
Hungary	+0.8 Jun	−7.2 Q1	−5.9	165	187	−4.0	8.58	7.80
Norway	+77.1 Jul	+78.1 Q2	+17.3	5.54	5.80	17.7	6.52	4.64
Poland	−19.0 Jun	−22.6 Jun	−4.9	2.33	2.80	−1.9	6.50	6.02
Russia	+174.0 Jun	+109.8 Q2	+6.2	25.2	25.6	4.5	11.00	7.36
Sweden	+19.0 Jul	+38.6 Q2	+7.7	6.55	6.88	2.4	4.38	3.96
Switzerland	+16.5 Jul	+91.4 Q1	+14.5	1.11	1.21	0.9	2.73	2.88
Turkey	−73.8 Jul	−45.8 Jun	−6.4	1.21	1.30	−2.7	18.12	6.61‡
Australia	−18.6 Jul	−61.1 Q2	−5.1	1.20	1.21	1.4	7.18	5.69
Hong Kong	−26.3 Aug	+26.4 Q1	+9.0	7.81	7.79	3.0	2.28	2.90
India	−93.3 Jul	−17.5 Q1	−3.2	44.4	40.9	−3.4	9.04	9.51
Indonesia	+35.6 Jul	+10.9 Q1	+2.8	9,207	9,399	−2.0	9.91	7.18‡
Malaysia	+39.7 Jul	+30.6 Q1	+14.4	3.44	3.51	−3.1	3.70	4.41‡
Pakistan	−21.2 Jul	−10.5 Q1	−8.6	76.9	60.6	−6.4	13.68	15.06‡
Singapore	+26.3 Jul	+32.8 Q2	+19.8	1.44	1.53	1.0	1.19	3.02
South Korea	−6.7 Aug	−1.8 Jul	−2.5	1,149	938	1.5	5.79	5.96
Taiwan	+13.9 Jul	+32.6 Q2	+5.2	31.8	33.0	−1.8	2.75	2.46
Thailand	+6.8 Jul	+11.4 Jul	−0.4	34.5	34.3	−3.0	3.85	4.36
Argentina	+11.3 Jul	+7.9 Q1	+2.9	3.05	3.17	1.7	14.19	na
Brazil	+29.5 Aug	−19.5 Jul	−1.6	1.67	1.96	−1.6	12.92	6.16‡
Chile	+18.2 Jul	+1.0 Q2	−0.1	517	524	8.7	7.92	3.86‡
Colombia	+1.2 Jun	−5.0 Q1	−2.6	1,995	2,175	−1.0	10.21	5.84‡
Mexico	−8.2 Jul	−5.3 Q2	−0.8	10.4	11.1	−0.1	8.18	8.41
Venezuela	+41.9 Q2	+37.8 Q2	+12.1	3.90	4.23§	1.6	17.03	6.55‡
Egypt	−22.2 Q1	−0.1 Q1	+0.2	5.40	5.66	−7.1	12.12	5.22‡
Israel	−13.2 Jul	+4.4 Q1	+0.2	3.60	4.13	−1.0	4.17	5.32
Saudi Arabia	+150.8 2007	+95.0 2007	+33.1	3.75	3.75	13.3	4.24	na
South Africa	−11.1 Jul	−22.3 Q1	−8.0	7.86	7.25	0.4	12.20	9.24
MORE COUNTRIES Data for the countries below are not provided in printed editions of *The Economist*								
Estonia	−4.2 Jun	−3.3 Jun	−10.8	10.8	11.5	−0.4	6.32	na
Finland	+12.7 Jun	+11.6 Jun	+4.5	0.69	0.73	4.5	4.90	4.32
Iceland	−1.2 Jul	−3.5 Q1	−14.6	85.0	64.7	2.0	15.97	na
Ireland	+38.2 Jun	−14.7 Q1	−3.5	0.69	0.73	−3.9	4.96	4.51
Latvia	−6.7 Jul	−6.0 Jun	−13.8	0.49	0.51	−1.5	5.80	na
Lithuania	−7.9 Jun	−6.0 Jun	−14.0	2.39	2.53	−0.7	5.75	na
Luxembourg	−6.7 Jun	+4.9 Q1	na	0.69	0.73	0.5	4.96	na
New Zealand	−3.3 Jul	−10.4 Q1	−7.1	1.47	1.45	1.2	7.55	5.97
Peru	+6.9 Jun	−1.5 Q2	−1.1	2.97	3.16	2.3	6.25	na
Philippines	−8.2 Jun	+5.6 Mar	+2.8	46.7	46.6	−0.8	4.06	na
Portugal	−24.2 May	−27.9 Jun	−9.0	0.69	0.73	−2.5	4.96	4.62
Slovakia	−0.9 Jun	−5.0 Jan	−4.7	20.9	24.8	−2.1	3.80	4.81
Slovenia	−3.9 Jun	−3.2 Jun	−5.8	0.69	0.73	0.1	4.96	na

*Merchandise trade only. †*The Economist* poll or Economist Intelligence Unit forecast. ‡Dollar-denominated bonds. §Unofficial exchange rate.

Markets

Sep 4th 2008
From The Economist print edition

Markets

	Index Sep 3rd	% change on one week	% change on Dec 31st 2007 in local currency	% change on Dec 31st 2007 in $ terms
United States (DJIA)	11,532.9	+0.3	−13.1	−13.1
United States (S&P 500)	1,275.0	−0.5	−13.2	−13.2
United States (NAScomp)	2,333.7	−2.0	−12.0	−12.0
Japan (Nikkei 225)	12,689.6	−0.5	−17.1	−14.6
Japan (Topix)	1,220.6	−0.3	−17.3	−14.8
China (SSEA)	2,389.7	−2.8	−56.7	−53.8
China (SSEB, $ terms)	149.0	+3.1	−61.9	−59.3
Britain (FTSE 100)	5,499.7	−0.5	−14.8	−24.0
Canada (S&P TSX)	13,137.7	−2.9	−5.0	−11.8
Euro area (FTSE Euro 100)	1,050.5	+2.0	−23.6	−24.5
Euro area (DJ STOXX 50)	3,369.0	+2.1	−23.4	−24.3
Austria (ATX)	3,562.5	+0.3	−21.1	−21.9
Belgium (Bel 20)	3,165.3	+4.3	−23.3	−24.2
France (CAC 40)	4,447.1	+1.7	−20.8	−21.7
Germany (DAX)*	6,467.5	+2.3	−19.8	−20.7
Greece (Athex Comp)	3,294.0	+1.5	−36.4	−37.1
Italy (S&P/MIB)	29,061.0	+3.9	−24.6	−25.5
Netherlands (AEX)	406.3	nil	−21.2	−22.1
Spain (Madrid SE)	1,271.6	+3.2	−22.6	−23.4
Czech Republic (PX)	1,452.1	+0.6	−20.0	−15.3
Denmark (OMXCB)	387.3	−0.3	−13.7	−14.6
Hungary (BUX)	20,265.4	+0.3	−22.8	−19.2
Norway (OSEAX)	458.2	−5.8	−19.6	−21.3
Poland (WIG)	41,152.3	+4.3	−26.0	−21.9
Russia (RTS, $ terms)	1,589.2	nil	−28.8	−30.6
Sweden (Aff.Gen)	273.0	+2.0	−19.8	−20.9
Switzerland (SMI)	7,256.6	+2.4	−14.5	−12.7
Turkey (ISE)	40,328.5	+1.9	−27.4	−29.6
Australia (All Ord.)	5,130.5	+0.8	−20.1	−23.8
Hong Kong (Hang Seng)	20,585.1	−4.1	−26.0	−26.1
India (BSE)	15,049.9	+5.3	−25.8	−34.2
Indonesia (JSX)	2,116.0	−0.7	−22.9	−21.4
Malaysia (KLSE)	1,085.4	+1.7	−24.9	−27.8
Pakistan (KSE)	9,239.2	+1.0	−34.4	−47.4
Singapore (STI)	2,706.5	+0.1	−21.9	−21.7
South Korea (KOSPI)	1,426.9	−4.5	−24.8	−38.7
Taiwan (TWI)	6,584.9	−7.0	−22.6	−21.2
Thailand (SET)	649.9	−3.9	−24.3	−26.0
Argentina (MERV)	1,758.1	−1.2	−18.3	−15.6
Brazil (BVSP)	53,527.0	−3.6	−16.2	−10.6
Chile (IGPA)	13,563.2	−1.6	−3.7	−7.2
Colombia (IGBC)	9,621.2	+6.3	−10.0	−9.0
Mexico (IPC)	26,467.8	+1.3	−10.4	−5.9
Venezuela (IBC)	40,779.3	+2.4	+7.6	−40.8
Egypt (Case 30)	8,401.2	+2.4	−19.8	−18.0
Israel (TA-100)	905.8	−3.0	−21.5	−16.1
Saudi Arabia (Tadawul)	8,504.7	−4.4	−23.0	−22.9
South Africa (JSE AS)	26,532.1	−3.3	−8.4	−20.4
Europe (FTSEurofirst 300)	1,181.9	+0.7	−21.6	−22.4
World, dev'd (MSCI)	1,318.2	−0.9	−17.0	−17.0
Emerging markets (MSCI)	912.0	−4.4	−26.8	−26.8
World, all (MSCI)	330.0	−1.3	−18.2	−18.2
World bonds (Citigroup)	747.7	−0.3	+2.4	+2.4
EMBI+ (JPMorgan)	440.3	+0.3	+1.6	+1.6
Hedge funds (HFRX)	1,257.7	−0.3	−5.4	−5.4
Volatility, US (VIX)	21.4	19.8	22.5	(levels)
CDSs, Eur (iTRAXX)†	100.0	−2.2	+97.6	+95.4
CDSs, N Am (CDX)†	156.0	+1.0	+100.3	+100.3
Carbon trading (EU ETS) €	24.5	−2.6	+10.2	+9.0

*Total return index. †Credit-default swap spreads, basis points.
Sources: National statistics offices, central banks and stock exchanges; Thomson Datastream; Reuters; WM/Reuters; JPMorgan Chase; Bank Leumi le-Israel; CBOE; CMIE; Danske Bank; EEX; HKMA; Markit; Standard Bank Group; UBS; Westpac.

GDP growth forecasts

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The UN Economic Commission for Latin America and the Caribbean (ECLAC) reckons the region's GDP growth will cool to 4% in 2009 from 4.7% this year. This compares with an average growth rate of 5.6% between 2004 and 2007, when the region's income was boosted by an improving terms of trade, high remittances from migrant workers and a strong global economy. Argentina is set to remain one of the region's racier economies but a 5% growth rate for 2009 would still mark a rapid cooling from the near-9% average in 2004-07. Brazil, by contrast, may prove a slower but far steadier performer. Mexico is likely to be the region's slowest growing economy, according to ECLAC.